

THE WESTERN AUSTRALIAN NATURALIST

Vol. 28

27th July 2012

No. 3

VERTEBRATE FAUNA OF THE FITZGERALD BIOSPHERE RESERVE, WESTERN AUSTRALIA

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ABSTRACT

The Fitzgerald Biosphere Reserve is described in terms of its location, extent and biophysical attributes. A synthesis of distributional and relative abundance data from both recent biological surveys and the state fauna data base reveals a diverse vertebrate fauna comprising five species of inland fishes, 15 frogs, 56 reptiles, 206 birds, 28 extant native and seven introduced mammals. Seven extinct mammal species are also reported.

With the exception of reptiles and inland fishes the biosphere reserve is species rich. This is attributed to the wide diversity of plant communities, their extent, quality and connectivity compared to elsewhere in the south-west biogeographic province. Climatic constraints, particularly rapid temperature change over the reptile active season and rainfall variability are hypothesised to account for the relatively low species richness of reptiles and inland fishes respectively.

Like elsewhere in Australia medium sized mammals have declined here substantially since European settlement. Seven species deemed part of the original (pre-European settlement) fauna are extinct. Of these, six are extant elsewhere in WA.

The diversity, quantity and quality of natural vegetation contributes to the Biosphere Reserve's status as a repository for species of particular conservation interest. Eleven species of mammal, 14 birds and 3 reptiles are variously listed as rare, threatened with extinction, or have high conservation value. One, Western Ground Parrot, is critically endangered and likely to become extinct in the Biosphere Reserve. One small skink (*Lerista viduata*) is endemic to the reserve.

Threatening processes for the flora and fauna of the Biosphere Reserve include the spread of *Phytophthora* dieback disease, predation by cats and foxes, inappropriate fire management regimes (including too large, uncontrolled wildfires), diminution of vegetation connectivity and degradation of wetlands and riparian vegetation and resource development projects. Rivers and wetlands make a far greater contribution to biodiversity than their areal extent would suggest. With respect to *Phytophthora* dieback, inappropriate road location and management with respect to drainage and uncontrolled vehicle and foot access are ongoing threats to biodiversity here.

INTRODUCTION

The Study Area

The Fitzgerald Biosphere Reserve (FBR) is located on the central south coast of Western Australia between the Pallinup River in the west and the Rabbit Proof Fence in the east (Figure 1) and includes approximately 1 354 630 ha. The area includes all of the Shire of Jerramungup (654,000 ha), approximately half of the Shire of Ravensthorpe (644,000 ha) and small portions of the Shires of Kent and Lake Grace (56,630 ha combined).

The area that is now Fitzgerald River National Park (FRNP) was gazetted as a 'C' class reserve in 1954, a status it retained until 1973, when the state government upgraded it to 'A' class National Park and put it under the control of the National Parks Authority of Western Australia. In November 1977 the Australian Commission for United Nations Educational Scientific and Cultural Organisation (UNESCO) sought nominations from each state for areas suitable for designation as International Biosphere Reserves. Subsequently

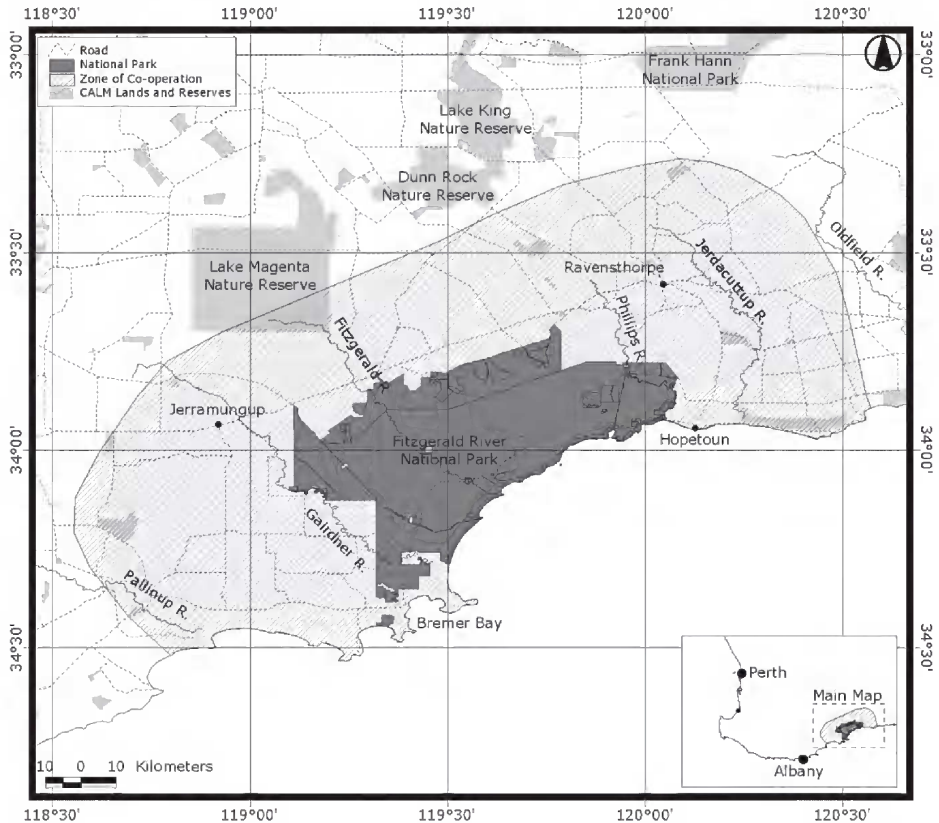


Figure 1. Locality map of the Fitzgerald Biosphere Reserve.

in April 1978 the FRNP was designated as one of 12 Australian Biosphere Reserves under UNESCO's Man and the Biosphere program (MAB). The FRNP was nominated because of its relatively pristine state and high floral diversity.

The FBR comprises three zones: the core, buffer and zone of co-operation. The core area is the FRNP, which covers approximately 329 000 ha (24% of total FBR area) and is managed by Department of Environment and Conservation (DEC) for conservation and recreation (CALM 1991).

A buffer zone almost surrounds the national park and covers approximately 130 000 ha (10% of total FBR area), and comprises mostly unallocated crown land and vested and unvested reserves. Land uses occurring in this zone include mining, flower picking, seed collecting, fence post cutting, gravel and sand extraction, firewood collection, nature conservation, tourism and recreational pursuits.

The zone of co-operation covers approximately 895 000 ha (66% of total FBR area) and comprises mostly privately owned land that has been largely cleared of native vegetation and is farmed for cereal crops, sheep and cattle. About 557 000 ha has been cleared and there is approximately 160 000 ha of remnant native vegetation within this zone in private ownership.

In summary, the FBR has

approximately 557 000 ha or 41% cleared farmland and 798 000 ha or 59% largely intact native vegetation.

The study area lies within the Eyre botanical district (Diels 1906; Gardner and Bennetts 1956) of the South-west Botanical Province (Beard 1990). It broadly coincides with the Esperance Plains biogeographical region which is divided into two sub-regions, and takes in all the ESPI or Fitzgerald Sub-region and the western end of the ESP 2 or Recherche sub-region. It also includes the middle portion of the MAL 2 or Western Mallee Sub-region (Thackway and Creswell 1995; Environment Australia 2000) (see Figure 1). A review of Western Australia's sub-regions was produced in 2002 from which these descriptions are taken (May and McKenzie 2003).

ESPI – Fitzgerald sub-region: The Fitzgerald sub-region is characterised by myrtaceous and proteaceous scrub and mallee heaths on sandplain overlying Eocene sediments and is rich in endemics. It has variable topography comprising subdued relief on the sandplains of the coastal region, interspersed with metamorphosed granite and quartzite ranges both inland and on the coastal plain. It lies mainly on the Bremer Basin and, in the eastern and western sections of the sub-region, within the Albany-Fraser Orogen of the Yilgarn Craton. It has extensive western plains over an Eocene marine sediment

basement with small areas of gneiss outcropping. Archaean greenstones and sand sheets with varying levels of laterisation with gravel soils also occur. The sub-region is dominated by yellow duplex soils and deep to shallow sands on the plains and dissected areas and by skeletal sandy soils on mountain ranges.

Vegetation types are diverse, often cryptic and significantly localised in distribution. Eucalypts dominate most systems in an unparalleled array of diversity. Broadly the types include coastal dune woodland, shrubland, heathland and mallee shrubland; mallet and Moort woodlands on gravel rises, clay sheets, colluvial slopes and greenstone; Flat-topped or Swamp Yate and York Gum woodlands on alluvials; Jarrah/Marri woodland in the west and Goldfields woodland and mallee systems mixing with south coast and wheatbelt taxa on Greenstone in the east.

ESP2 – Recherche Sub-region: The Recherche sub-region has variable relief, comprising the Quaternary coastal sandplains and dunes overlying Proterozoic gneiss and granite as well as Eocene and more recent coastal limestones. Numerous granitic islands occur in the near shore area of this sub-region. Vegetation types are diverse and comprise heath, coastal dune scrub, mallee, mallee-heath and granite heath.

MAL2 – Western Mallee Sub-region: This sub-region has more relief than its eastern counterpart and

comprises clays and silts underlain by kankar, exposed granite, sandplains and laterite pavements. Salt lake systems occur on a granite basement. Mallee communities occur on a variety of surfaces, Eucalypt woodlands occur mainly on fine-textured soils with scrub-heath on sands and laterite.

Description of vegetation

Within the FBR there are ten vegetation systems as described by Beard (1976, 1979). These are characterised by a particular series of plant communities that recur in a catenary sequence or mosaic pattern linked to topographic, pedological and/or geological features (Beard 1976). The following broad fauna habitats were identified within the FBR (following Muir 1977) and are used for analysis of results.

Mallee-Heath

Comprises various species of mallee eucalypts, including tree mallee and shrub mallee (Muir 1977), with an understorey ranging from scrub to heath from 0.5–2m tall on variable soils types.

Woodland

The woodlands include Salmon Gum (*Eucalyptus salmonophloia*), Moort (*E. platypus*) and mallet of various species with a shrubland or heath understorey or very sparse herb understorey on loamy to clayey soils.

Riparian Woodland

Occurs on rivers, creeks, around lakes and other wetlands and comprise Flat-topped or Swamp Yate (*E. occidentalis*) with a shrubland or sparse to mid-dense heath understorey on loamy soils. Most of this habitat is subject to periodic, though infrequent, inundation.

Coastal Dune Complex

Occurs adjacent to the sea and estuaries and comprises shrubland and heath and occasionally Coastal Moort (*E. utilis*) in the east, or Peppermint (*Agonis flexuosa*) woodland in the west, or halophyte communities. The soils are usually sandy with varying amounts of organic matter.

Heath

Comprises shrubs up to 2m tall with a canopy cover of 2–100% on variable soils.

Granite Complex

A mosaic of cryptogams, shrubs, sedges, trees and other life forms e.g. lichens which are dependent on their proximity to granite rock. These habitats occur along rivers and creeks and in other areas in the northern part of the FBR which is underlain by the Yilgarn Craton.

Wetland Complex

Includes lakes, swamps, estuaries and other wetlands where waterbirds are present either permanently or intermittently.

In the results, records are also sometimes included from the surrounding vegetation, which ranges from woodland and shrubland to halophyte communities.

Shrubland

An uncommon habitat type in the FBR and comprises the shrub life-form over 2m in height with or without a lower shrub understorey on variable soils.

The percentage representation (Table 1) of survey sites in the above habitats closely reflects their relative occurrence across the FBR. As can be seen mallee-heath is the dominant habitat with the remaining seven habitats occurring less commonly. Detailed vegetation descriptions in Chapman and Newbey (1995 a & b) and more particularly in Craig *et al.* (2007) indicate the very high species richness per unit area of the flora.

Table 1. Habitats surveyed in the Fitzgerald Biosphere Reserve

Habitat	No of sites surveyed (% of total sites)
Mallee-heath	103 (55%)
Woodland	25 (13%)
Riparian Woodland	20 (10%)
Coastal Dune Complex	15 (8%)
Heath	9 (5%)
Shrubland	6 (3%)
Granite Complex	5 (3%)
Wetland Complex	5 (3%)
Total	188

Major Rivers

The major rivers in the FBR Region from west to east are the Pallinup, Bremer, Gairdner, Fitzgerald, Hamersley, Phillips, Steere and Jerdacuttup. Of these the Pallinup is the largest with the main channel being 150 km in length, a catchment of 4 970 km² and a mean annual flow of 36 000 megalitres (Pen 1999). Except for the Bremer River (and to a lesser extent the Steere River) these have the following characteristics: they originate on or close to the Yilgarn Plateau and downstream traverse an Eocene marine plain, they are naturally saline with most exhibiting enhanced salinisation and flow magnitude due to land clearing for agriculture in their catchments. The Fitzgerald, Phillips, Hamersley, Jerdacuttup and Oldfield rivers all exhibit reverse salinity profiles, i.e. they are progressively more saline upstream; it is likely that this also applies to the other rivers. A notable exception to this is the Steere River. All have only infrequent contact with the sea

because, except following flooding, they are barred from the sea by beach sand bars. The Jerdacuttup River is an exception, it has probably been barred from the sea by tall vegetated dunes since the last Holocene rise in sea level approximately 6 000 years ago (Hodgkin and Clark 1990).

Climate

The study area experiences an annual rainfall distribution typical of a Mediterranean climate. Generally cool to cold, wet winters and warm to hot, dry summers occur with rainfall decreasing northwards and eastwards across the area. Rainfall variability is indicated in Table 2 (see also Fishes discussion). The average annual minimum temperature across the area is 9°C with an annual maximum of 24°C. Annual rainfall is between 400–600mm. Annual weather patterns can vary with the summer being regularly affected by cyclonic low pressure systems which can cause local flooding.

Table 2. Mean annual rainfall and variability for selected stations on the south coast of Western Australia.

Station	Mean Annual Rainfall (mm)	Coefficient of Variation	No. Years of Observations
Pemberton	1196.0	0.16	60
Albany	934.9	0.16	124
Bremer Bay	631.8	0.18	89
Ravensthorpe	426.0	0.22	100
Munglinup	516.6	0.20	23
Esperance	621.2	0.19	31

Geology

The geological history of the area extends back to the Late Archaean (approximately 3,100 million years ago). Since then, the area has experienced several stages of tectonic activity producing three major geological units that now make up the area. These are the Yilgarn Craton, the Albany-Fraser Province, the Mt Barren Group (Green and Wetherley 2000). These units, and their interfaces, determine to a large extent the nature of major landforms in the Region.

Yilgarn Craton

The rocks of the Yilgarn Craton formed around 2,600 to 3,100 million years ago and are among the oldest on Earth. Two major rock types occur within the Yilgarn Craton, greenstones and Yilgarn granites. The greenstones are the oldest and were originally deposited as layers of sediment (silt, sand and gravel) on an ancient sea bed and were then overlain with lava and exposed to heat and pressure to form new minerals and textures. Within the area greenstones occur mainly around Ravensthorpe. The Yilgarn granites are composed of granite and granitic gneisses with feldspars, quartz and minor biotitic outcrops. In most areas the granites are covered with weathered soils and only appear at the surface as scattered isolated hills with boldly rounded shapes. This formation comprises the northern section of the study area.

Mount Barren Group

The deformed sediments, derived from the Yilgarn Craton, now form the mountains to the north of Doubtful Island Bay which culminate in the Mount Barrens and the peaks and ridges of the Stirling Range (Stirling Range Formation). This formation is found in the FRNP and joins the Yilgarn granites in the north of the park.

Albany-Fraser Province

The Albany-Fraser Province was shaped by the Albany-Fraser Orogeny (1,345–1,140 million years ago) that occurred during Antarctic and Australian sub-continental movements. Sediments derived from granites and greenstones of the Yilgarn Craton deposited along the southern flank of the craton were deformed and intruded by bodies of molten granite. This province extends from about Walpole to Fraser Range.

Landforms and Soils

Landforms in the area include sand dunes (mobile and stable), hills, headlands, valleys, break-aways, granite outcrops, coastal plains, low mountains, inlets and river valleys.

The long history of igneous intrusion, deformation, erosion and sedimentation in the area has, together with the influence of climate and local relief, created a wide diversity of soils. The rocks of all four geological units have been deeply eroded

and weathered and are overlain in part by weathered profiles forming various types of soils. These include red earths, red duplex soils, red and yellow duplex soils, yellow sands, yellow duplex soils, shallow sandy soils, laterite residuals and calcareous loams. Unconsolidated sands occur on granitic and limestone headlands and cliffs along the coast (CALM 1991).

Previous Surveys

The FRNP has a long history of biological collecting and the first was probably carried out by the scientific collector on Captain George Vancouver's voyage in October 1791 (Bradby 1989). Since then the flora has been the main object of attention and at present close to 1700 species of plant are known to occur within the FRNP (Newbey and Hickman 2008). In contrast to flora, it was not until 1969 that the University of Western Australia conducted the first systematic fauna survey. The work was conducted in drought conditions and did not reveal the richness of the area (Chapman and Newbey 1995a).

In 1985 a large-scale systematic survey was initiated in response to the paucity of faunal knowledge of FRNP and adjacent areas. The survey consisted of sampling and describing the geology, landforms, land surface, soil, vegetation, flora, weather and climate and vertebrate fauna (Chapman and Newbey 1995a). During the survey, vegetation

and flora were recorded in detail at 225 plotless quadrats and 84 quadrats, the latter were also fauna survey sites.

A two phase fauna, vegetation and flora survey of the Ravens-thorpe Range was conducted in 1982–1983 and 1987 (Chapman and Newbey 1995b). At that time the vertebrate fauna was completely unknown and the Phase I survey was carried out to document the fauna as a basis for conservation management of the Range. The Heath Rat *Pseudomys shortridgei* was rediscovered as part of the Phase I study. Phase II was set up to reassess the distribution and abundance of the Heath Rat and provide detailed data on landform, soil, vegetation and floristics at all trapping sites in the Range (Chapman and Newbey 1995b).

During 1993–1996 systematic vertebrate fauna surveys were undertaken in the buffer zone and zone of co-operation around the FRNP. These surveys were funded jointly by Environment Australia (formerly Australian Nature Conservation Agency) and CALM (now DEC) and carried out as part of a project investigating the conservation value of FBR buffer zone and zone of co-operation. The project was completed in December 1996 and the results given in Sanders (1996).

An extension of the above project commenced in February 1996 to re-monitor a subset of the quadrats established in the FRNP by Chapman and Newbey

in the mid 1980s. In addition, a further seven quadrats were established in the buffer zone using the same methods as those employed in the FRNP.

Surveys were conducted in the Bandalup Hill area, in the Ravensthorpe Range, from 1998–2005. Some of these were carried out on behalf of Ravensthorpe Nickel Operations Pty Ltd (RNO), which developed the Ravensthorpe Nickel Project, a mining and processing operation 35km east of Ravensthorpe developed to produce a mixed nickel and cobalt hydroxide. As part of this process, RNO commissioned a number of vertebrate fauna inventory surveys and conducted annual surveys on their tenements targeting listed vertebrate species and short range endemics of the Bandalup Corridor.

Purpose of report

Despite the data from the projects described above providing a valuable resource for documenting biodiversity and regional context for documenting gaps in knowledge of vertebrate distributions in south-western Australia some of these data are unpublished and a synthesis has never been carried out. The purpose of this report is to collate these data. Such a synthesis is timely given recognition of the south-west of Western Australia as one of the top 25 biodiversity hotspots in the world and the only one on the Australian continent (Myers *et al.* 2000). The Biosphere

Reserve incorporates three south coast sub-regional hotspots, Fitzgerald River National Park (FRNP), the Corackerup area and Ravensthorpe Range (Hopper and Gioia 2004).

METHODS

Sources of data for this report

This report summarises the data collected during systematic fauna surveys conducted as part of the FBR Study and those on behalf of Ravensthorpe Nickel Operations. This data is included in the primary data set, presented as the annotated list, which also includes records from FRNP from Chapman and Newbey (1995a) and records from the Western Australian Museum. A secondary data set (Appendix II) includes unpublished records from various sources (see below) for the buffer zone and the zone of co-operation (see Figure 2).

The combined survey effort for the FBR Study and the Ravensthorpe Nickel Operation comprises 216 sites surveyed between 1993 and 2001 (Appendix I, Figure 2). Note site abbreviations have been used below for most species within the annotated list.

Fitzgerald Biosphere Reserve Surveys 1993–1997

These surveys were conducted in two phases – Phase I (1993–1996) involved systematic sampling of eight new sites across the area. Phase II (1996–1997) involved re-sampling a subset (15) of the monitoring sites established in

the FRNP by Chapman and Newbey in the mid 1980s, the re-establishment of four quadrats in the Ravensthorpe Range originally installed by Chapman and Newbey, and the establishment of two new sites within the zone of co-operation (1996–1997).

Phase I – A total of eight new sites (CO01, CO03, NRI0, NRI1, OT10, OT13, PNI1, RV06) were selected and at each site pitfall, Elliott and cage trapping methods were used. Depending on the site a varying number of pitfall traps (20 litre buckets) were set along a transect with a 10m long x 30cm high aluminium flywire drift-fence set to bisect alternate pitfall traps. In addition, an Elliott box trap (30x10x10cm) was set close to each pitfall trap and varying numbers of cage traps (58 x 20 x 20cm) were set at intervals along the transects. The bait used in the Elliott and cage traps was a mixture of peanut butter, rolled oats and sardines.

Phase II – A subset of 15 quadrats (4B, 5B, 12A, 14A, 16A, 25B, 26B, 28B, 29B, 31B, 45A, 51A, 53A, 62B, 63B) that were originally established in 1985 in the FRNP were re-opened in 1996, in addition four quadrats (RA07, RA08, RA09, RA13) (first established in 1982) were re-established in the Ravensthorpe Range and two new quadrats (CK01, CK02) established in Corackerup Nature Reserve. Phase I & II sites are in Figure 2.

In the FRNP each 'A' quadrat consisted of a pair of traplines (200–300m apart) of 6 x PVC pipes (60cm deep x 14 cm external diameter) pitfall traps. Each line of six traps was bisected with a 50m long 30cm high flywire drift fence. Ten Elliott traps were set close to each pitfall line and a cage trap was set at the end of each line. Each 'B' quadrat consisted of a single line of PVC traps as above.

The original pitfall traps had been removed from the Ravensthorpe Range quadrats during 1984 but their position was still visible facilitating their re-establishment. They comprised a line of 5 x PVC pipe, Elliott and cage traps as above. Two new quadrats were established in Corackerup Nature comprising a pair of lines of 6 x PVC pipe, 10 Elliott traps and a cage trap as above.

In addition to the above, numerous opportunistic surveys were carried out and data are included in the annotated lists. These comprised Elliott and cage trapping at 12 sites, bird censuses, hand searching, head-torching and spotlighting as well as recording road kills.

Ravensthorpe Nickel Project

At 2005 seven fauna trapping programs had been completed within the Bandalup Hill and Corridor project area comprising surveys in February and April 1998 (Craig and Chapman 1998), November 1999 and April 2000 (Chapman 2000), October 2000,

December 2001 and August 2005. Ravensthorpe Nickel Project Sites are given in Figure 2.

Sampling associated with the Ravensthorpe Nickel Project comprised 14 trapping grids and 11 Elliott traplines (RNOCMSI–8, RNOI–6 and RNOE1–11 (Appendix I) each located within a defined habitat. Each trapping grid consisted of two rows of six pitfall traps. The lines were set 50m apart and the pits (20 litre buckets) within lines spaced at 10m intervals and connected with a single length of fly wire fence (30 cm high). A row of eight Elliott traps was positioned between the two pit lines. A cage trap was placed at either end of the central line of Elliott traps. Elliott traps were generally spaced 10 m apart, however the spacing at each site varied according to the distribution of shade cover. Elliott and cage traps were baited with a mixture of rolled oats and peanut butter, and each site and trap assigned a unique reference number.

Sites RNOCMSI–4 trapping grids were established in November 1999 and sampled again during April 2000 and December 2001 (Figure 2, Appendix I). RNOI–06 were established and trapped in October 2000 and RNO4 was re-trapped in December 2001.

Eleven transects of 20 medium sized Elliott traps were established targeting listed murid rodents (RNOE1–11). With the exception of transects RNOE10 and RNOE11 traps were opened for five consecutive nights (Ap-

pendix I). Sampling of RNOE1–5 occurred during November 1999, April 2000 and October 2000. RNOE1 and RNOE5 (the most prospective lines for the Heath Rat *Pseudomys shortridgei*) were again opened in December 2001. However, RNOE2–4 were replaced by transects at new locations RNOE6–11 in December 2001.

The Western Australian Museum collections and other data

Numerous opportunistic sightings/collections have also been made through the area some of which are stored in private databases whilst others have been lodged with the WAM. This synthesis only incorporates the WAM records captured from the database using the following search area between 34.5°S and 33.15°S, and between 118.5°E and 120.5°E. In some cases records for some species fall just outside the FBR, except where they represent the only record for the species they have been left in the discussion. All mammal sub-fossil remains were identified by A. Baynes of the WAM who also provided data on each species.

Some additional records from a variety of publications have been incorporated into this synthesis and are in Appendix II

Data analysis

Spatial analyses were carried out using the Geographical Information System ArcView 3.2, Microsoft Access 2000 and Microsoft Excel 2000.

Spatial analysis using ArcView utilised datasets from various sources.

- Fauna Base (WA Museum)
- Biota Environmental Sciences Database
- Fauna Consultants Database
- Geoscience Australia (background data)
- Department of Environment and Conservation (FRNP boundary and other managed lands).

Wider distributions

For the vertebrates of the FBR a brief description of their wider distribution is given for each taxon. Owing to the fact that some species are, or in the case of some mammals were, widely distributed their presence in the arid zone and Kimberley region is also indicated. The arid zone encompasses the Pilbara, Gascoyne, Murchison, Goldfields, Nullarbor Plain and desert regions. The geographic descriptions of distribution in the annotated lists were derived as follows: fishes from Allen *et al.* (2002), reptiles from Storr *et al.* (1983, 1990, 1999, 2002), frogs from Tyler *et al.* (2000), mammals from Van Dyck and Strahan (2008) and birds from Johnstone and Storr (1998, 2004) and Barrett *et al.* (2003). For distributional descriptions 'south-west' refers to within the south-west land division, 'south-western' refers to a considerably larger area encompassing the Goldfields and some of the Murchison. Except for fishes descriptions only per-

tain to distributions within WA. Western Australian Museum registration numbers, prefixed by M or R for mammals and reptiles/amphibians respectively, are provided for species that are extensions of range, on the edge of their range or of particular taxonomic interest.

Vegetation classification

For the purposes of this synthesis the vegetation of the study area has been classified into broad fauna habitat types (following Muir 1977). A total of 188 sites had the habitat noted at the time of the surveys and these are given in Table 1.

Nomenclature

Nomenclature including common names and taxonomy for herpetofauna, mammals and fishes generally follows that of Western Australian Museum (2010). Birds follow Christidis and Boles 2008.

Limitations and presentation of data

No attempt has been made to standardize trap effort across either habitat types or substrate. As such the data reported here should be viewed as indicative of the habitats/substrates that various taxa occur in, rather than a comparison of relative abundance across habitats or a detailed account of habitat preferences. Similarly, techniques employed to collect mammals and herpetofauna including pit trapping, raking,

systematic searches, head torching etc have not been standardized across habitats.

In annotated lists a 'record' is the sum of the product of number of observations (which include sightings, call identifications for birds and frogs and trapping results) and number observed. For each vertebrate class, data are presented as an annotated list followed by a discussion pertaining to that class. For mammals extant and species presumed extinct are listed separately.

RESULTS

Inland Fishes

The term "freshwater fishes" is usually used for species which are independent of the sea and are non-estuarine; the term emphasises both their inland distribution and dependence upon waters that are usually fresh. However, in this paper the term 'inland' is used instead because without exception these fishes are capable of withstanding saline to hypersaline waters and in their natural environment the latter condition almost always prevails. However, here they are euryhaline species capable of the osmoregulation required to survive in freshwater; this is necessary because on flooding these rivers have a rapid change from hypersaline to fresh although there is rapid reversion to saline or hypersaline conditions following flooding.

The four native and one introduced inland species inhabiting the FBR region are described below and listed in Appendix II. The four native species have been recorded from each of the eight rivers. Excluded are marine or estuarine fish, e.g. Sea Mullet (*Mugil cephalus*), which occasionally intrude into lower reaches of rivers. Distributional and other data are summarised from cited literature and reference to the WAM collection. Note that previous references to *Galaxias truttaceus* from the Fitzgerald River e.g. Hodgkin and Clark (1990) are actually *Galaxias maculatus* (Morgan 2003) and the record of *Edelia vittata* from the Phillips River e.g. Allen *et al.* (2002) is presumed erroneous as no specimen can be located nor basis for this record be established.

GOBIIDAE

Blue Spot Goby *Pseudogobius olorum*

Small (to max. 60 mm – total length (TL)) bottom dwelling fish with a fast, erratic stop and start swimming pattern. They are brown tan in colour with irregular dark markings with eyes on the top of their heads and pelvic fins fused to form a disc. They are probably the most widespread and abundant fish in the region, present in all rivers, many creeks and lakes and extending up to 110 km inland along the length of the river. They tolerate hypersaline water to 60,000 mg/l (A. Chapman, unpublished data)

and feed on algal and bacterial mats as well as small aquatic fauna (diet from Morgan *et al.* 1998). In WA they occur from Murchison River to Thomas River and in eastern Australia from about Fowlers Bay to the Victorian – South Australia border.

GALAXIIDAE

Common Galaxias *Galaxias maculatus*

Small to medium sized fish (to max 140 mm TL though most adults are much smaller at 50–60 mm). They are scaleless and characterised by a single dorsal fin above the anus. Their dark dorsal and lateral colouration is due to minute melanic spots which sometimes coalesce to give a barred appearance. They are relatively widespread and abundant in the region, extending to 100 km inland and capable of penetrating even minor tributaries following flooding and withstanding salinities to 55 000 mg/l (Chapman 2003). In WA they occur from Kent River to Thomas River and in eastern Australia from the Queensland border to Port Lincoln in South Australia including Tasmania. They also occur elsewhere in the southern hemisphere including New Zealand, South America, the Falkland and Chatham Islands.

ATHERINIDAE

Western Hardyhead *Leptatherina wallacei*

Small fish (to max TL 70 mm) of silvery appearance with large

eyes; they are often seen in shoals of several hundred. They are less abundant and widespread than the previous two species and are present in all FBR rivers. In the Swan Estuary they feed on unicellular algae, micro crustaceans, flying insects and polychaete worms (Morgan *et al.* 1998). Western Hardyheads are endemic to WA occurring from Moore River to Thomas River.

SPARIDAE

Black Bream *Acanthopagrus butcheri*

The largest inland fish in the region (to max 540mm TL though most are much smaller); they are ovate and laterally compressed and a dark silvery colour. Well known as a popular table fish. Black Bream are confined to larger, deeper river pools and estuaries where juveniles are often encountered in large numbers. They occur up to approximately 40 km inland. In Culham and Hamersley Inlets they become stressed at 60 000 mg/l and do not survive beyond 85 000 mg/l (Hoeksema *et al.* 2006). Black Bream have a wide distribution from Shark Bay in WA to Mallacoota in Victoria (Allen *et al.* 2002) though avoiding the riverless stretch of coast along the Nullarbor Plain.

POECILIIDAE

Eastern Gambusia *Gambusia holbrooki*

The only introduced species recorded from the FBR where it is only known from the Pallinup

River (Mees 1977). They are small, drab fish pale olive green dorsally appearing bluish on their sides; (females to max 60 mm TL, males to 35 mm). Give birth to live young. They occur naturally in Mexico and Central America and were introduced to Australia in the 1920s as both an aquarium fish and to control mosquitoes. In certain circumstances particularly lentic waters that offer little or no cover, they have an agonistic effect by fin nipping native fish (Gill *et al.* 1997). There are no data on competition for food.

A survey in 2000 revealed that *Gambusia* were still present at five sites in the Pallinup River (David Morgan *pers. comm.*). As they have persisted in the Pallinup they must be considered a potential threat to other south east rivers; it is likely that hypersaline water is an impediment to their establishment as their upper tolerance is 30,900 mg/l (Chessman and Williams 1974).

Fish Discussion

Freshwater fishes in south-western Australia have a similarly high rate of endemism as vascular plants with eight of 10 principal freshwater species occurring nowhere else (Allen 1982). Additionally, the south-west has the highest freshwater fish endemism per unit area of mainland Australia, being only surpassed by Tasmania (Allen *et al.* 2002).

The fish fauna of the wetter

south-west includes some highly unusual and specialised species; for example the Salamanderfish (*Lepidogalaxias salamandroides*) and the Black-striped Dwarf Galaxias (*Galaxiella nigrostriata*) – are both capable of adult aestivation as a drought response and the former is particularly enigmatic on account of its obscure phylogenetic relationships and unusual anatomy. The biology, distribution and identification of south-western freshwater fishes have been reviewed by Morgan *et al.* (1998) but the review did not extend to the area covered by this paper. The drier south-west fish fauna on the other hand is characterised by greatly reduced endemism and species richness. Its components are species which are adaptable and opportunistic as opposed to specialists, they are capable of withstanding high salinities and variable and unpredictable flow regimes. Except for the Pallinup River, introduced species are not present.

Extending east along the south coast of Western Australia, and including the FBR, there is a marked diminution of numbers of fish species that corresponds with the climatic constraints of decreasing rainfall and perhaps more importantly, increasing variability. Bremer Bay approximates to the point where the climate of the south coast changes from moderate to dry Mediterranean (map in Beard 1981). Mean annual rainfall and rainfall variability as a co-

efficient of variation i.e. standard deviation divided by mean are given in Table 2. Increased variability is indicated by a larger coefficient. These data, which are derived using long term annual rainfall provided by the Bureau of Meteorology, indicate variability is greater in the vicinity of Ravensthorpe than either to the west or east of the town and that it increases from the coast inland.

Herpetofauna

The herpetofauna of the study area is represented by 72 taxa from 11 families, drawn from 4585 records from the FBR Study 1993–97 and the Bandalup Hill Study 1998–2005. They are listed below and in Appendix II. The surveys undertaken by us recorded 76% of the known herpetofauna based on WAM records.

HYLIDAE

Slender Tree Frog *Litoria adelaidensis*

23 records from three sites: CO01A, CO03A, GA05, with only a single animal pit-trapped, the remainder noted from call. Apparently less common in the study area than its congener, *Litoria cyclorhyncha*. Most records from western half of study area. Habitat (where documented) was typically heath, wetland complex or mallee heath. Recorded between March and December. An additional 20 records from six localities (WAM), also FRNP. Wider distribution is through-

out the south-west of Western Australia from near Geraldton to east of Esperance and inland to Dumbleyung.

Spotted-thighed Frog *Litoria cyclorhyncha*

117 records from 26 sites: 12A, CO01B, CO03A, FRNP, GA03, GA04, GA05, NR10C, NR11, NR11A, NR11B, OT10B, OT12B, OT13, OT15, PN01, PNI1D, RNOCMS2, RNOCMS3, RV02, RV06, RV06A, RV06B, SC03, SC06, SC07, opportunistically at two locations, present across the FBR. Eighteen were pit trapped, the remainder identified from call or sighted. Recorded from most habitats with most records from woodland (32%), mallee heath (26%), heath (21%) and riparian woodland (16%), with a few records from shrubland (1%), wetland complex (1%) or coastal dunes (3%). Recorded all months. One of the more commonly encountered frogs within the FBR. An additional 68 records from 27 localities (WAM). The wider distribution is from east of Albany to Israelite Bay, inland to near Balladonia and Scadden.

LIMNODYNASTIDAE

Western Spotted Frog *Heleioporus albopunctatus*

52 records from nine sites: 63B, CO03A, GA04, NR10B, OT13E, OT13H, RNOCMS4, SC02, SCO7A. The most commonly encountered *Heleioporus* within the study with most localities non-coastal. One third of our records (36.5%) were from pit traps, the

remainder identified from calls (42.5%) or directly observed (21%). Most records from woodland (59%) but also mallee heath (28%) and heath (13%). Recorded in all months except February and March. An additional 14 records from 10 localities (WAM), also FRNP. The wider distribution is the greater south-west excluding only the corner south-west of Tambellup.

Moaning Frog *Heleioporus eyrei*

18 records from five sites: 31B, NR10B, NR11A, NR11B, P4, all from pit traps. Most records from coastal dunes (88%), but also heath (6%) and mallee heath (6%). Sites mostly scattered in lower half of the study area. Records from January, April, May, August–December. WAM records unknown, also FRNP. The wider distribution is coastal districts from Geraldton to Cape Arid inland to Corrigin.

Western Banjo Frog *Limnodynastes dorsalis*

213 records from 27 sites: 28B, 29B, 31B CO01B, CO03A, FRNP, GA04, GA05, NR10B, NR11A, NR11B, OT02A, OT10A, OT10C, OT10D, OT13E, OT13H, P4, P5, PNI1B, PNI1C, RNOCMS4, RNOCMS5, RVO6A, SC02, SC03, SC07. This mobile species was readily trapped with 131 records (61.5%) from pit traps, with the remaining 38.5% identified by call. Most records from heath (42%), mallee heath (28%) and coastal dunes (27%), but also from woodland (3%). Records

scattered throughout study area with both coastal and hinterland localities. Recorded across all months with most records (53%) during October, November and December. An additional 36 records from 22 locations (WAM), also FRNP. The wider distribution is the greater south-west.

White-footed Frog *Neobatrachus albipes*

20 records from nine sites: 12A, NR10B, NR11B, OT10D, RNOCMS1, RNOCMS3, RNOCMS4, RNOCMS6, SC02, with all records from pit traps. Habitat included mallee heath (45%), heath (35%), coastal dunes (15%) and woodland (5%). Recorded throughout the year but not in January, February, June or October. An additional 21 records from 14 locations (WAM) also FRNP. The wider distribution is south-east coast, southern Goldfields and south-east Wheatbelt.

Kunapalari Frog *Neobatrachus kunapalari*

Two records from two sites: NR01A, NR01C from pit traps in mallee heath and granite complex habitats in the northern half of the study area. An additional 12 records from five locations (WAM) also FRNP. Records from March, May and October. The wider distribution is south-east interior of WA, coastally only in FBR and between Cape Arid and Israelite Bay.

Humming Frog *Neobatrachus pelobatoides*

One recorded from pit trap at SC05 in woodland habitat. An additional 31 records from five locations (WAM). Records from April, May and June. The wider distribution is greater south-west excluding the far south-west, extending into western arid zone.

MYOBATRACHIDAE

Quacking Frog *Crinia georgiana*

Four records from three sites: 45A, CO03A, FRNP. Habitat comprised riparian woodland but also recorded from the damp areas (wetland complex) near the East Mount Barren Ranger's Residence. Two of the four records were from pit-traps. An additional 26 records from 10 sites (WAM). Sites typically within 10–15 km of the coast, although CO03A is located over 60km inland. Wider distribution is south-west north to Gingin, inland to Dumbleyung and east to Cape Le Grand.

Glauert's Froglet *Crinia glauerti*

One hand-captured from a swamp near the Gairdner River at Bremer Bay, GA01. This is a minor range extension from Pallinup River and there are no records lodged with the WAM for the search area. Wider distribution is coastal south-west from Moore River to (now) Bremer Bay.

Bleating Froglet *Crinia pseudinsignifera*

192 records from 36 sites: 12A, CK00, CO01B, CO01C, CO03A, CO03B, FRNP, GA01, GA04, GA05, NR05, NR09, NR10, NR10C, NR11A, NR11B, NR11D, OT02B, OT06, OT07, OT08C, OT11B, OT12A, OT12B, OT13D, OT13H, OT15, OT16A, OT16B, PN01, PN04, PN11E, RV06, RV06A, RV06B, SC07. 9% from pit traps, with the remainder either hand captured or observed (24%) or identified from call (67%). From all habitats, but mostly mallee heath (27%), riparian woodland (35%), wetland complex (12%) and heath (11%) with a few records (15%) from coastal dunes, granite complex, shrubland and woodland. Most records between March and November (98.4%) typically June, with only three records across the summer months. An additional 28 records from 17 localities (WAM), also FRNP. The majority of sites were located more than 20 km from coast due possibly to its association with moisture retentive soils associated with granite outcrops or farm dams. The wider distribution is greater south-west to edge of arid zone.

Small Western Froglet *Crinia subinsignifera*

Three records from three sites all at the western end of FRNP. Wider distribution is south west WA from Manjimup south to the coast thence in a narrow coastal band (possibly with a break in FRNP) to Cape Arid.

Turtle Frog *Myobatrachus gouldii*

286 records from 13 sites: 29B, CK01, CO03A, GA05, NR10B, OT13C, OT13D, OT13E, OT13H, RV06B, SC02, SC03, SC04. Just 8% of records from pit traps, the remainder largely from calls e.g. approximately 100 heard calling from OT13D on 25/8/93. Habitat where noted included mallee heath (74%), heath (16%), and woodland (10%). An additional six records from five sites (WAM), also FRNP. Most records from the northern half of study area. The majority of records were more than 20km from coast. Recorded in all months except January, February and April. Most records from June, August and September. The wider distribution is greater south-west excluding far south-west coastal and extending to edge of arid zone.

Crawling Toadlet *Pseudophryne guentheri*

137 records from 40 sites: 51A, CK01, CO01B, CO03, CO03A, GA04, GA05, NR01A, NR05, NR009, NR10, NR10B, NR10C, NR11A, NR11B, NR11D, OT07, OT08B, OT08C, OT10A, OT10C, OT10D, OT11B, OT13E, OT13H, OT15, OT16A, OT16B, PN04, PN11, PN11E, PN12, RA07, RNOBC, RVO6A, RVO6B. SC02, SC03, SC06, SC07.

Readily trappable with 62% records from pit traps, others identified from call and occasional observations. Sites scattered throughout FBR including coastal locations. Also present in dams in agricultural zones. Re-

corded across all habitat types with most records from mallee heath (54%) and heath (17%), but also woodland (11%), coastal dunes (10%), shrubland (4%), wetland complex (2%), riparian woodland (1%) and granite complex (1%). Most records April, May, June and November. Not recorded in January or February. An additional 27 records from 17 locations (WAM), also FRNP. The wider distribution is greater south-west extending to arid zone.

Western Toadlet *Pseudophryne occidentalis*

Two records from two sites: Ravensthorpe (R10533) and Phillips River (R44861) (WAM). Wider distribution is central, southern interior of WA extending only to south coast in vicinity of FBR and east of Esperance and to west coast in vicinity of Shark Bay.

CHELUIDAE (Freshwater Tortoises)

Oblong Turtle *Chelodina oblonga*

Two adults in a pool on Chittowirrup Creek, south of Jerramungup in November 1994. Eleven records from seven locations (WAM), also FRNP. The wider distribution is permanent waterways of south-west WA east to the Fitzgerald River.

CARPHODACTYLIDAE (Geckos)

Barking Gecko *Underwoodisaurus milii*

85 records from 20 sites: 53A, 63B,

CK00, FRNP, NR01A, NR01B, OT08B, OT10A, OT13H, OT14, OT15, PN01, PN11, PN11B, PN11C, PN11D, RA07, SC02 and opportunistically on two occasions at Bandalup Hill. 23 records were from pit traps. Scattered throughout the FBR. Habitat where noted mostly woodland (69%), although also from mallee heath (16%), riparian woodland (6%), granite complex (5%) and heath (4%). Recorded in all months except February and June. An additional 54 records from 14 sites (WAM). Wider distribution is southern WA excluding inner south-west, north on west coast to Shark Bay.

DIPLODACTYLIDAE (Geckos)

Clawless Gecko *Crenadactylus ocellatus ocellatus*

62 records from 22 sites: CO01B, GA03, GA04, NR01A, NR01B, NR06, OT06, OT02A, OT08B, OT13E, OT13H, OT14, PN09, PN11, PN11B, PN11C, RNO4, RNO5, RNOCMS5, RNO3, RNOE4, RV06B. Not readily trapped with only four records (7%) from pit trap events, the remainder recorded from opportunistic searches. Sites spread across the northern half of the FBR, typically greater than 20km from the coast although two sites are within 12km. Most records from woodland (64%) but also from mallee heath (29%) and granite complex (7%). At Bandalup Hill it was recorded from exposed granite outcroppings or clayey soils with a surface scatter of granite pebbles. Recorded in all

months except June, with most records from the spring months (36%). Remainder of records spread evenly across other seasons (Summer 18%, Autumn 25% and Winter 21%). An additional 68 records from 30 sites (WAM) also FRNP. The wider distribution is greater south-west excluding inner south-west, extending into arid zone.

South Coast Gekko *Diplodactylus calcicolus*

124 records from 33 sites: 13B, 14A, 26B, CK01, CK02, CO01B, CO01C, CO03, FRNP, GA05, NR11A, OT10A, OT10C, OT10D, OT13H, PN01, PN11, PN11A, PN11B, PN11C, PN11D, RA09D, RA13, RNO4, RNO5, RNO7, RNOCMS1, RNOCMS2, RV01, RV06, RV06A, RV06B, SC02 and opportunistically at three sites at Bandalup Hill. On these data it was one of the more commonly encountered and widespread reptile species in the FBR. 60% of records were pit trapped, remainder detected from eyeshine whilst head-torching. More commonly recorded from mallee heath and woodland and less commonly from coastal dunes, heath, riparian woodland and granite complex habitats. Recorded in all months except June, with most records from spring. An additional 49 records from 20 sites (WAM) also FRNP, most are throughout the FBR though mainly away from the coast. Wider distribution is southern WA excluding only Swan Coastal Plain and inner south-west.

Soft Spiny-tailed Gecko *Strophurus spinigerus inornatus*

Eight records from eight sites: CK01, CK02, CO03, NR11, OT10A, RNOCMS8, RV06B, SC03.

Seven of the eight records collected by the authors were from pit traps. Sites were throughout the FBR including coastal localities. Habitat included mallee heath, woodland and coastal dunes. Recorded throughout most of the year with the exception of June, July and September. An additional 24 records from 13 sites (WAM) collection, also FRNP. Wider distribution is southern wheabelt west to Darling Range south to central southern coast.

GEKKONIDAE (Geckos)

Marbled Gecko *Christinus marmoratus*

94 records from 21 sites: CK00, FRNP, GA03, GA05, NR01A, NR01B, NR05, NR06, OT08B, OT08C, OT13E, OT13H, OT14, PN01, PN11, PN11B, PN11C, RV07, SC06, CS07A, and one opportunistic site at Bandalup Hill. Almost half of the records (42%) came from one site (NR01B). Just three of the 94 records recorded from pit traps, probably due to its preferences for granite outcrops (where not many pit traps are located) and the fact that away from granite it is typically arboreal. Sites occurred throughout the FBR at both coastal and inland localities. Habitat where noted included granite complex (54%), woodland (30%) and mallee heath (16%). Recorded

across all months except July. An additional 178 records from 44 sites (WAM). Wider distribution is southern WA north on west coast to Shark Bay.

PYGOPODIDAE (Legless Lizards)

Aprasia repens

100 records from 37 sites: 51A, CK02, CO01A, CO01B, CO03, CO03A, ETB, GA04, GA05, NR01, NR10B, NR10C, NR11A, NR11B, OT10, OT10A, OT10B, OT10D, OT11A, OT12A, OT12B, OT13E, OT16A, P4, P5, PN11, RNO1, RNO2, RNO3, RNO7, RNOCMS6, RNOCMS7, RNOCMS8, RV06A, RV06B, SC07. 72% from pit traps. Hand captured in spoil heaps and abandoned stick-ant (*Iridiomyrme conifer*) nests. Habitat when noted included mallee heath (48%), heath (21%), coastal dunes (16%), woodland (6%), shrubland (5%) and riparian woodland (4%). Most commonly recorded in October, November and December, few records other months and none in February, April, June or July. Also FRNP. The wider distribution is south-west WA excluding inner south-west.

Aprasia striolata

Two records from two sites in the Ravensthorpe Range, RA07A, RA09D, both in mallee habitat. An additional four records from four sites (WAM) also FRNP. Sites were along the coast and into the central region of the eastern half of the biosphere. Wider distribution is a narrow south coastal strip from Albany to Cape Le Grand.

Delma australis

65 records from 18 sites: 14A, CO01A, CO01B, NR11A, NR11B, OT10B, OT13E, P4, P5, RNO1, RNO3, RNO4, RNO5, RNO6, RNOCMS7, RV01 and opportunistic at two sites Bandalup Hill. Readily pit trapped with 65% recorded but also easily raked from beneath leaf litter and loose debris. Localities were scattered throughout the FBR. Habitat when noted included mallee heath (79%), coastal dunes (18%) and riparian woodland (3%). In the vicinity of Bandalup Hill recorded on 51 occasions including 28 pit trap records and 23 that were raked from spoil. Recorded throughout the year. An additional 26 records from 17 sites (WAM) also FRNP. Wider distribution is south-western WA from Shark Bay to Eyre excluding west coast.

Delma fraseri fraseri

49 records from 22 sites: GA01, GA04, NR11A, NRIIC, OT10, OT10A, OT10B, OT13E, OT16A, PN11, RA07, RNO1, RNO2, RNO3, RNO4, RNO6, RNOCMS1, RNOCMS2, RNOCMS3, RNOCMS5, RNOCMS7, RNOCMS8. Readily trapped with 57% collected by us from pit traps, the remainder were hand caught. Sites scattered mostly about the eastern end of the FBR including inland and coastal locations. Habitat included mallee heath (54%), coastal dunes (28%), woodland (8%), heath (8%) and granite complex (2%). Most records from spring and early summer (86%). Few records in

late summer, autumn and winter. An additional 27 records from 21 sites (WAM) also FRNP. Wider distribution is south-west WA excluding the inner south-west.

Common Scaly-foot *Pygopus lepidopodus*

31 records from 15 sites: 51A, CO05A, NR11, NR11A, OT8C, OT09, OT13A, OT13B, P4, RNO2, RNO3, RNO4, RNO5, RNOCMS5, RNOE2. Almost half the records (48%) from pit traps with the remainder from observations of active animals. As with *D. f. fraseri*, most sites were in the eastern half of the FBR and included both coastal and inland localities. Habitat included mallee heath (61%), coastal dunes (31%), woodland (4%) and heath (4%). Recorded throughout the year, though most records from spring. An additional 17 records from 12 sites (WAM) also FRNP. Wider distribution is southern WA excluding south-west forested areas, north on west coast to Shark Bay,

SCINCIDAE (Skinks)

Acritoscincus trilineatum

30 records from 12 sites: 05B, CO01A, GA01, GA04, NR05, NR10C, NR11A, NR11B, PI7, RNO6, SC06, SC07. Readily trapped with 21 records from pit traps from a range of habitats including coastal dunes, riparian woodland, woodland, shrubland and mallee heath. Recorded from Bandalup Hill in thicket on gritty skeletal soil. Found in March, March,

September, October, November and December. These data suggest that this taxon was moderately common within the FBR, generally within 5km of the coast, although two records from RNO6 (at Bandalup Hill) located some 30km inland. An additional 42 records from 15 sites (WAM), also FRNP. Wider distribution is west coast north to Gingin inland to Darling Range, south coast to vicinity of Israelite Bay inland to Stirling Range.

Cryptoblepharus pulcher clarus

93 records from 21 sites: 04B, GA02, GA05, NR01, NR01B, OT02A, OT10, OT13H, PN05A, PNI1, PNI1A, PNI1B, PNI1C, PNI1D, PNI5, RA09D, RNOBC, RNOCA, RNOCMS2, RNOCMS3, RNOCMS4. Eleven records from pit traps, the remainder were observations or hand captures. Over half the records (59%) from woodland, also common in mallee heath (39%), scarce in granite complex (2%). Single record from riparian woodland habitat. Recorded in January, April, March, May, August–December. An additional 22 records from 10 sites (WAM), also FRNP. Wider distribution is south coast from Stirling Range to WA border, inland to Balladonia.

Ctenotus catenifer

One record, a single animal pit trapped in the northern FRNP in 1985 (Newbey and Chapman 1985). Wider distribution is south-west coastal districts, west coast north to Badgingarra, south

coast east to vicinity of Israelite Bay.

Ctenotus gemmula

37 records from 19 sites: 28B, 31B, 51A, 62B, 63B, CO03, CO03A, NR11A, NR11B, OT10A, OT11A, OT13E, P4, RNO2, RNO3, RNOCMS6, RNOCMS8, SC02, SC03. Thirty records were from pit traps. Habitat where noted comprises predominantly sandy areas within coastal dunes (50%), mallee heath (41%) and heath (9%). Most commonly encountered in spring and summer, with few records in autumn and only the one in winter. An additional 25 records from 16 sites (WAM), also FRNP. The wider distribution is predominantly south coast from Rocky Gully to Toolina Cove with few west coast records.

Ctenotus impar

131 records from 33 sites: 12A, 14A, 28B, 45A, 51A, 53A, CK00, CK01, CO01A, CO01B, CO01C, CO03, CO03A, CO03B, NR01, NR11A, NR11B, OT09, OT10A, OT10B, OT10C, OT10D, OT13E, P17, RNO1, RNO6, RNOCMS4, RNOCMS6, RV06A, RV06B, SC02, SC03, SC06. Readily trapped with 86% of records from pit traps, the remainder were hand captured or observations of active animals. Recorded in mallee heath (70%), heath (15%), coastal dunes (12%), riparian woodland (2%) and woodland (1%). The majority of records (77%) between October and February, with few records in April, May and September, no

records from the winter months of June, July and August. An additional 53 records (sites not known) (WAM), also FRNP. The wider distribution is south-west WA excluding inner south-west.

Ctenotus labillardieri

29 records from eight sites: GA02, GA04, GA05, OT12B, RA07, RA08M, RNOE5, RV06. Recorded mostly by observations and hand captures with singles recorded in a pit trap, an Elliott trap and by raking. Mostly from the northern FBR in riparian woodland, mallee heath and granite complex habitats. Recorded in all months except February, July and December. An additional 27 records from (sites not known) (WAM), also FRNP. The wider distribution is south-west coastal districts, west coast north to Swan River, south coast east to vicinity of Israelite Bay.

King's Skink *Egernia kingii*

Five observation records from two sites: OT12B, RVO6: Recorded only from riparian woodland habitat on granite boulders. An additional four records from three sites (WAM), also FRNP. Wider distribution is south-west WA including some islands.

Egernia multiscutata

17 records from seven sites: 29B, 51A, 58B, 62B, 63B, OT10B, RNOE6. Four records from pit traps the remainder observations. Habitat was heath (60%) or mallee heath (40%). Recorded in

all seasons, though most records from spring and summer. An additional six records from six sites (WAM), also FRNP. Wider distribution is much of inland south-west WA with sporadic occurrence on south and west coasts.

Egernia napoleonis

Eight records from two sites: NR11 and FRNP. Within the biosphere this species has a mostly coastal distribution with all but one of the sites within 10 km of the coast. Recorded in coastal dunes and heath habitats in all seasons. An additional 18 records from 18 sites (WAM). Wider distribution is south-west WA, west coast north to Jurien Bay, south coast east to vicinity of Toolina Cove.

Egernia richardi

Seven records from four sites: PNI1, PNI1D, RNOE3 and opportunistically on one occasion at Bandalup Hill, all from wooded habitats in the Ravensthorpe area. One pit-trapped, the remainder observations or hand captures. An additional eight records from five sites (WAM). Wider distribution is central southern WA i.e. eastern Wheatbelt and adjacent Goldfields.

Hemiergus initialis initialis

122 records from 42 sites: 05B, 26B, CK00, CK01, CO03, GA04, GA06, NR01A, NR01B, NR06, NR10, NR10C, OT08A, OT08B, OT08C, OT10, OT13E, OT13H,

OT14, PN02, PN11, PN11A, PN11B, PN11C, PN11D, RA13, RNO5, RNOCA, RNOCMS1, RNOCMS2, RNOCMS3, RNOCMS4, RNOCMS5, RNOCMS6, RNOCMS7, RNOCMS8, RNOE1, RNOE6, RV04, SC03 and opportunistically at two locations at Bandalup Hill. Slightly less than 20% of captures were recorded from pit traps, with the majority raked (80%) from spoil piles, or from under debris. Habitat included mallee heath (55%), woodland (40%), granite complex (2%), riparian woodland (1%) shrubland (1%) and wetland complex (1%). Found in January, March, May, September, October, November and December. An additional 50 records from 21 sites (WAM), also FRNP. Wider distribution is three apparently disjunct populations in south-western WA, the largest extending into Goldfields.

Hemiergis peroni peronii

165 records from 46 sites: 12A, 28B, 45A, CK02, CO01A, CO01B, CO01C, CO03A, GA01, GA03, GA04, GA05, GA06, NR01, NR01A, NR06, NR11A, NR11B, OT08B, OT08C, OT10D, OT10B, OT12B, OT13E, OT13H, OT14, PN01, PN09, PN11, PN11A, PN11B, PN11C, RNO1, RNO2, RNO3, RNO5, RNOCMS6, RNOCMS7, RNOCMS8, RNOE5, RNOE6, RV06, RV06A, RV06B, RV07 and opportunistically at one location at Bandalup Hill. Forty nine (30%) pit trapped, the remainder typically from searches of microhabitat. Habitat included Woodland (44%), mallee heath (42%), riparian

woodland (7%), granite complex (3%), coastal dunes (2%) and heath (2%). Recorded in all months except June with most records (71%) between October and January. An additional 101 records from 41 sites (WAM), also FRNP. Wider distribution is western two thirds of southern WA, east to Toolina Cove north to Bunington Spring.

Lerista distinguenda

231 records from 66 sites: 12A, 28B, 29B, 31B, 45A, 58B, CK01, CO01A, CO01B, CO01C, CO03, CO03A, GA03, GA04, NR01, NR01A, NR06, NR10C, NR11, NR11A, NR11B, OT07, OT08A, OT10A, OT10B, OT10C, OT10D, OT12A, OT12B, OT13E, OT13H, OT14, PN02, PN07, PN09, PN11, PN11A, PN11B, PN11C, PN11D, RA07, RA09D, RA13, RNO1, RNO2, RNO3, RNO4, RNO5, RNO6, RNOCA, RNOCMS1, RNOCMS2, RNOCMS5, RNOCMS6, RNOCMS7, RNOCMS8, RNOE2, RNOE5, RNOE6, RV01, RV06A, RV06B, SC03, SC07 and opportunistically at two locations at Bandalup Hill. 68% were recorded from pit traps, the remainder collected opportunistically. Where noted, habitats included mallee heath (47%), coastal dunes (24%), woodland (16%), riparian woodland (5%), heath (4%), shrubland (3%) and granite complex (1%). Recorded in all months except June, with more than three quarters of records between October and February. An additional 79 records from 27 sites (WAM), also FRNP. Wider distribution is south-western WA

from Greenough River to Great Australian Bight.

Lerista dorsalis

14 records from two localities west of Hopetoun townsite (WAM). Wider distribution is south-east coast and hinterland of WA from Hopetoun to state border.

Lerista microtis intermedia

11 records from four localities (WAM). Wider distribution is East Mt Barren to Israelite Bay.

Lerista microtis microtis

Six records from two localities (WAM). Wider distribution is south-west coast from Leeuwin – Naturaliste ridge to Bremer Bay.

Lerista viduata

14 records from three localities (WAM). All localities are woodland or mallee habitats in Ravensthorpe Range; as this species is not known from anywhere else it is the FBR's only endemic vertebrate.

Menetia greyii

82 records from 27 sites: CK01, CO01A, CO01B, CO01C, GA04, NR03, NR11A, NR11B, OT10A, OT11B, OT13E, OT13H, PN11, PN11B, PN11C, RA09D, RNO1, RNO3, RNO4, RNO5, RNOCMS5, RNOCMS6, RNOCMS7, RNOE6, RV07, SC02, SC03. Readily trapped with 45% of records from pit-traps, also regularly seen actively foraging (40% of records).

Remainder hand-captured from beneath debris or raked from debris or spoil piles. Recorded from mallee heath, riparian woodland, coastal dunes, shrubland, woodland and granite complex habitats. Most records late spring, early summer and early autumn. An additional 22 records (sites unknown) (WAM), also FRNP. Wider distribution is entire WA except northwest Kimberley and Great Sandy Desert.

Morethia obscura

418 records records from 81 sites: 12A, 14A, 28B, 31B, 45A, 51A, 53A, CK02, CO01A, CO01B, CO01C, CO03, CO03A, FRNP, GA03, GA04, GA06, NR01, NR01A, NR01B, NR05, NR10, NR10B, NR10C, NR11, NR11A, NR11B, NR11D, OT08A, OT08C, OT09, OT10A, OT10B, OT10C, OT10D, OT11A, OT11B, OT12B, OT13C, OT13E, OT13H, P17, P5, P6, PN01, PN01A, PN07, PN09, PN11, PN11A, PN11B, PN11C, PN11D, PNI6A, RA09D, RA13, RNO1, RNO2, RNO3, RNO4, RNO5, RNO6, RNO7, RNOCMS1, RNOCMS2, RNOCMS3, RNOCMS5, RNOCMS6, RNOCMS7, RNOCMS8, RNOE3, RNOE4, RNOE6, RV06, RV06A, RV06B, RV08, SC02, SC03, SC06 and opportunistically from one location. Most records (48%) from pitfalls, but also hand-captured (6.5%), from Elliotts (0.5%), and raked from a spoil pile (0.2%). Most common in mallee heath (50%), coastal dunes (21%) and woodland (13%), also heath (8%), riparian woodland (4%), wetland complex (3%) and

shrubland (1%). Recorded in all months except June and July. WAM records unknown. Also FRNP. Wider distribution is greater south-western WA excluding inner south-west.

Western Blue-tongue *Tiliqua occipitalis*

36 records from 19 sites: CK00, CO03, CO03A, FRNP, GA04, GA05, GA06, NR01, NR06, NR10, NR11, PNI5, RNO5, RNO6, RNOCMS8, RNOE5, RNOE7, RV06A and opportunistically from one location. Recorded from cage traps (8%), Elliott traps (22%), pitfall traps (8%) and opportunistically (55%). Most records from mallee heath, but also wetland complex, heath, granite complex and coastal dunes. With one exception recorded between September and January. An additional three records (sites unknown) (WAM), also FRNP. Wider distribution is greater southern WA from Minilya to state border excluding Nullarbor Plain and inner south-west coast.

Tiliqua rugosa rugosa

450 records from 106 sites: 12A2, 14A1, 16A2, 25B, 26B, 45A1, 53A1, 53A2, CK00, CK01A, CK01B, CK02A, CK02E, CK03E, CO01, CO01A, CO01B, CO01C, CO03, CO03A, CO03B, ETB, ETD, FRNP, GA01-06, NR01, NR01C, NR02, NR02F, NR06, NR10, NR10A, NR10C, NR11, OT08C, OT10, OT10A, OT10B, OT10C, OT10D, OT10E, OT13A, OT13B, OT13C, OT13D, OT13E, OT13F, OT13H,

PN01, PN01A, PNI1, PNI1A, PNI1B, PNI1C, PNI1D, PNI5, PNI6A, PNI6B, PNI6C, RA09, RNO2, RNO5, RNO6, RNO7, RNOCA, RNOCMS1-4, RNOCMS6-8, RNOE1-5, RNOE7-9, RVO4A, RVO6A-B, SC01A, SC02A, SC03, SC03A, SC06A, SC07A and opportunistically from 12 locations. The majority from either Elliott traps (164) or cage traps (124). Also from pitfalls (43), observation (114) and road-kill (1). Recorded in all habitats in all months. An additional 16 records (sites unknown) (WAM), also FRNP. Wider distribution is greater south-western WA from vicinity of Carnarvon to vicinity of Israelite Bay.

AGAMIDAE (Dragons)

Amphibolurus norrisi

Six records from six sites: RNOCA, RNOE4, RNOE7, RNOE8 plus two at Bandalup Hill, all from dense mallee heath and woodland. Bandalup Hill is a westward extension of range by 350 km from Point Malcolm near Israelite Bay (L.A. Smith *pers. comm.*). Wider distribution is coastal areas of south-east WA west to (now) Bandalup Hill.

Eastern Heath Dragon *Ctenophorus chapmani*

11 records from seven sites: 51A, CO03, NR10B, NR11A, RNO2, RNOCMS6, RNOCMS7.

Nine from pit traps in deep pale sands. Sites scattered throughout the eastern section of the biosphere. Habitat included mallee heath (60%), heath (30%) and coastal dunes (10%). An

additional five records from three sites (WAM) also FRNP. Wider distribution is south-east of WA from Stirling Range to state border.

Ctenophorus maculatus griseus

66 records from 27 sites: CK01, CK02, CO01B, CO01C, FRNP, GA05, NR01A, OT09, OT10A, OT10B, OT10C, OT10D, OT11B, OT13B, OT13H, P4, RNO1, RNOCA, RNOCMS4, RNOE11, RNOE2, RNOE6, RNOE7, RNOE8, RVO6, RVO6A and one opportunistic site at Bandalup Hill.

Most records greater than 15km from the coast. Not readily trapped with just nine (14%) pit trap records, the remainder from observations. Habitat when noted typically mallee heath (69%), also granite complex (19%), woodland (10%), riparian woodland and woodland (2%). Recorded in all months except April, June and July. An additional 61 records from 28 locations (WAM) also FRNP. The wider distribution is central and southern wheatbelt from Coorow to Boorabbin and Ravensthorpe.

Ornate Crevice Dragon

Ctenophorus ornatus

107 records from six sites: GA04, OT12B, OT15, RVO4B, RVO6, RVO7, with 57% and 30% of records from OT15 and RVO6 respectively. Not readily trapped as the species is confined to granite outcrops. Recorded throughout the year except

January and February, but this was probably due to a diminished sampling effort in appropriate habitat during this time of the year. An additional 15 records from nine sites (WAM) also FRNP. Wider distribution is south-western WA excluding coastal areas except south-east coast. Additionally an outlier Murchison population.

Western Bearded Dragon *Pogona minor minor*

24 records from 15 sites: 51A, CK00, CO01C, CO03, FRNP, GA05, NR01C, NR11A, OT10, OT10A, OT10D, PNI6B, RNOCMS4 and two opportunistic locations at Bandalup Hill.

Habitat included mallee heath (82%), coastal dunes (8%) and riparian woodland (8%). Recorded in all months except May, June and July. An additional 20 records from 14 sites (WAM) also FRNP. Wider distribution is greater part of WA excluding only far south-west, far south-east, Kimberley and Great Sandy Desert.

VARANIDAE (Monitors)

Bungarra or Sand Monitor

Varanus gouldii

A single adult seen in Salmon Gum *Eucalyptus salmonophloia* woodland in Cocanarup Timber Reserve, PNI1A during November 1993. At this latitude the species was at the southern limits of its range. No records from the WAM. Wider distribution is entire WA excluding south coastal fringe.

Heath Monitor *Varanus rosenbergi*
87 records from 43 sites: 04A, 05B, 25B, 51A, CR00, CK01, CO01A, CO01C, CO03, FRNP, GA01, GA02, GA03, GA04, GA05, GA06, NR01, NR01C, NR11, OT10, OT10C, OT13E, OT13H, PN01, PN01A, PN11B, PN16A, RNO1, RNO3, RNOCA, RNOCMS1, RNOCMS2, RNCTS6, RNOCMS8, RNOE1, RNOE2, RNOE4, RNOE5, RNOE8, RV04, RV06, RV06A, SC01. Where noted from a range of habitats including mallee heath, coastal dunes, riparian woodland and woodland. Active in the months of August–April. An additional 14 records from (sites unknown) (WAM) also FRNP. Wider distribution is far southern WA, north to Perth, Norseman and coastal strip south of Nullarbor Plain.

TYPHLOPIDAE (Blind Snakes)

Ramphotyphlops australis

17 records from 11 sites: CO03A, GA05, NR11A, OT10C, OT10D, RNO4, RNOCMS3, RNOCMS4, RNOCMS6, RNOCMS8, RNOE5. Recorded in October, November and December from heath, coastal dunes, mallee heath and shrubland habitats. An additional 17 records from 11 localities (WAM), Also FRNP. Wider distribution is greater south-western WA with an outlier record from Burrup Peninsula.

Ramphotyphlops bicolor

Six records (WAM). Wider distribution is greater south-eastern WA.

Ramphotyphlops bituberculatus

One record from one locality (WAM). Wider distribution is southern WA.

Ramphotyphlops pinguis

One record from one locality (WAM). Wider distribution is south-west WA.

Ramphotyphlops undescribed species

A single specimen of this undescribed species was collected from Cocanarup Timber Reserve (PNI1D) and lodged in the WAM collection. Also known from Cape Arid National Park east of Esperance.

BOOIDEAE (Pythons)

Carpet Python *Morelia spilota imbricata*

Three records from two sites: FRNP, PNI1, all in woodland. No records from the study area held by WAM. Wider distribution is greater south-western WA from Geraldton to Mundrabilla.

ELAPIDAE (Elapid Snakes)

Southern Death Adder *Acanthopsis antarcticus*

One record from one locality in north east FBR. Wider distribution is Darling Range and central Wheatbelt as well as south coast between Ravens-thorpe and state border.

Bardick *Echiopsis curta*

14 records from 12 sites: CO01C, GA02, GA04, GA05, NR11A, OT13E,

OT13H, RNOCMS6, RNOCMS8, SC03. Recorded from pitfall traps, road kills, observation of live individuals and one raked from a spoil pile. Habitats included mallee heath, coastal dunes, riparian woodland and wetland complex. Recorded throughout the year except June, July and August. An additional 21 records from WAM (sites unknown), also FRNP. Wider distribution is greater southern-western WA from Kalbarri to Eyre.

Crowned Snake *Elapognathus coronatus*

34 records from 17 sites: GA04, GA05, NR11A, NR11C, NR11D, OT10B, OT13C, OT13H, RNO1, RNO2, RNO4, RNOCMS2, RNOCMS3, RNOCMS7, RNOE2. Nine records from pit-traps, nine observed whilst active and the remainder raked from beneath spoil heaps, debris or from abandoned stick-ant nests. Records from throughout the year in coastal dunes, mallee heath, woodland and shrubland habitats. An additional 17 records from WAM (sites unknown), also FRNP. Wider distribution is south coastal districts east to Point Culver, west coast north to Muchea.

Tiger Snake *Notechis scutatus*

33 records from 22 sites: CO01, CO03, FRNP, GA01, GA02, GA03, GA04, GA05, GA06, NR06, NR07, NR10, NR11, OT10, OT12B, PN15, PN16A, PN16C, RNOE1, RNOE4, RV03, SCO7A.

Either as observations (70%) or

road kill (30%). Where noted most records from mallee heath, but also wetland complex and coastal dunes. Recorded from all months except June, most records from spring. An additional 10 records from WAM (sites unknown) also FRNP. Wider distribution is south west WA from Gingin to Israelite Bay.

Parasuta gouldii

14 records from 10 sites: CO03A, NR06, NR07, OT08B, OT13C, OT13E, PN11, RNOE5, SCO1A. Most records of hand captured individuals with just three recorded from pit-traps. Predominantly in mallee heath (69%), but also granite complex (8%), heath (8%) and woodland (15%). Recorded from all seasons. An additional 20 records from WAM (sites unknown), also FRNP. Wider distribution is greater south-western WA extending through Goldfields to edge of Nullarbor Plain.

Black-backed Snake *Parasuta nigriceps*

Three records from three sites: CK00, OT12B, OT13A. In riparian woodland and mallee heath habitats. An additional 15 records from WAM (sites unknown), also FRNP. Wider distribution is southern WA, north to Dandaragan east across Goldfields to state border on coastal strip south of Nullarbor Plain.

Dugite *Pseudonaja affinis*

32 records from 22 sites: CK00, FRNP, GA02, GA04, GA06, NR01,

PN01, PN11, PN11A, PN16A, RNOCA, RNOCMS1, RNOCMS3, RNOE1, RNOE3, RNOE4, RNOE5, RV06, SC06A and opportunistically at three locations. Most records as observations (60%), but also from pit traps, Elliott traps, raked from spoil piles and as road kill. Habitat included mallee heath (62%), woodland (29%) and granite complex (9%). All records between October and April with most in October, November, January and April. An additional 18 WAM records, also FRNP. Wider distribution is southern WA from Cervantes extending through Wheatbelt and Goldfields to state border on southern Nullarbor Plain.

Ringed Brown Snake *Pseudonaja modesta*

One record from one locality (WAM). Wider distribution is much of WA except far south and south-west coast.

Square-nosed Snake
Rhinoplocephalus bicolor

Three records from three sites: CK00, CO03, NR11A. One hand captured under rock and two captured in pitfall traps. Habitats were mallee heath and coastal dunes. An additional six WAM records (sites unknown), also FRNP. Wider distribution is south coast from Cape Leeuwin to Thomas River.

Herpetofauna discussion

The seven most commonly recorded species in descending order were *Tiliqua r. rugosa*

(n=450), *Morethia obscura* (n=418), *Myobatrachus gouldii* (n=286), *Lerista distinguenda* (n=231), *Limnodynastes dorsalis* (n=213), *Crinia pseudinsignifera* (n=192) and *Hemiergis peronii* (n=165). Seventeen species were recorded by the authors from fewer than 10 records, these are: *Crinia georgiana*, *C. glauerti*, *Neobatrachus kunapalari*, *N. pelobatoides*, *Chelodina oblonga*, *Strophurus spinigerus inornatus*, *Aprasia striolata*, *Amphibolurus norrisi*, *Varanus gouldii*, *Ctenotus catenifer*, *Egernia kingii*, *E. napoleonis*, *E. richardi*, *Lerista dorsalis*, *Ramphotyphlops biturberculatus*, *R. pinguis* and an undescribed species of *Ramphotyphlops*.

Most herpetofauna species of the study area typically comprises species that in WA have populations coinciding with southwest botanical province. Notable exceptions include *Amphibolurus norrisi* for which Bandalup Hill represents the western-most locality in a distribution that essentially encompasses western Victoria and coastal South Australia and the far south-east coast of WA (Cogger 1996). Other exceptions include *Diplodactylus maini*, *Lialis burtonis*, *Ctenophorus cristatus*, *Pogona minor minor*, *Varanus gouldii*, *Menetia greyii* and many of the snakes.

The south-west Botanical Province of Beard (Beard 1990) (excluding the South West Interzone) supports approximately 180 species of herpetofauna (total excludes sub-species) (Storr *et al.* 1983, 1990,

1999, 2002) including: four Hylidae (tree frogs), 26 Myobatrachidae (ground frogs), three Cheluidae (freshwater tortoise), 13 Agamidae (dragon lizards), 18 Gekkonidae (geckos), 13 Pygopodidae (legless lizards), 64 Scincidae (skinks), five Varanidae (monitor lizards), six Typhlopidae (blind snake), three Boidae (python) and 25 Elapidae (front-fanged snakes). Approximately 40% of this fauna has been recorded from the FBR, which comprises approximately 0.4% of the total area of the south-west Botanical Province.

At a bioregional level the ESP bioregion supports 83 species and is the second least species rich region when compared to other nearby regions. The analysis of the herpetofauna assemblage indicates that approximately 84% of the species known from the ESP bioregion (bioregion data from www.naturemap.dec.wa.gov.au) have been recorded from the study area.

In general the terrestrial herpetofauna families are well represented in the biosphere with the notable exception of the Elapids and the fossorial snakes in the genera *Brachyurops* and *Simoselaps*. The food of both these genera, eggs of lizards and snakes in the case of Elapids, and small skinks of the genus *Lerista*, in the case of fossorial snakes (Storr *et al.* 2002) occur throughout the project area although suitable sandy substrate may be limited. Of the FBR herpetofauna only a single

species, *Lerista viduata*, is endemic. A factor limiting the species richness of herpetofauna in the biosphere compared to that of northern bioregions of the south-west could be the intermittently hot and cold climate during the reptile active season which is inimical to ectotherms. This is due to the passage of summer cold fronts along the south coast which cause very rapid temperature changes.

Avifauna

The documented avifauna of the FBR is represented by 206 taxa from 55 families as given in the annotated list below and Appendix II. This summary is drawn from 5996 records over 201 sites across the FBR. The annotated list gives details for each species in the primary data set. Records from other sources are in Appendix II.

CASUARIIDAE

Emu *Dromaius novaehollandiae*

165 records from 48 sites: 12A, 14A, 45A, CK00, CK02, CO01A, CO01B, CO03, CO03A, ETE, FRNP, GA03, GA04, GA05, NR01C, NR05, NR10, NR10C, NR11A, NR11D, OT10C, OT10D, OT11B, OT12B, PN01, PN04, PN11, PN16C, RV01, RV06, RV06B, RV07, RV09, RNOCMS2, RNOCMS3, RNOCMS4, RNOCMS5, RNOCMS6, RNOCMS8, RNOE1, RNOE6, RNOE7, RNOE9, RNO1, RNO3, RNOE2, RNOE3, RNOE5. Recorded throughout the FBR including FRNP except for the Bremer Bay coastal area. Seen mainly in ones with some twos

and one group of 50. Males with 2–11 dependent young seen during June, October, August and December. In all habitats except heath. Wider distribution is most of WA except waterless deserts and Nullarbor Plain.

MEGAPODIIDAE

Malleefowl *Leipoa ocellata*

295 records from 22 sites: CK01, CO03, CO03A, FRNP, GA02, GA03, GA04, GA05, GA06, NR01, NR01A, NR06, OT10, OT10B, OT10D, PN01, PN01A, PN11, PN11C, PN16A, PN16B, RNOCMS3. Mostly in mallee with a sparse to dense heath understorey, across the FBR with the exception of the coastal areas. We acknowledge a recording bias with this species as some of these records are drawn from community volunteers who kept records during 1994–1997 supplementing those of the authors. Most commonly recorded in the Ravensthorpe area (34% of records). Mainly seen in ones and twos with groups of up to eight being seen feeding at the edge of the road at the Phillips River Bridge west of Ravensthorpe. Nest mounds observed at 12 sites with two mounds being worked on by birds during August. Wider distribution is southern-western WA except for far west, including south coast, extending into arid zone in Great Victoria Desert and to state border south of Nullarbor Plain.

PHASIANIDAE

Stubble Quail *Coturnix pectoralis*

42 records from 11 sites: CO01B,

CO03, CO03C, GA03, OT10, OT10C, OT16A, PN01, RV01, RV05, RV06. Heard calling mainly from paddocks adjacent to the above sites. Wider distribution is western and southern WA excluding most deserts, north to Bidydanga on north west coast.

Brown Quail *Coturnix ypsilophora*

One record from a site, OT02C, near Jerramungup. Wider distribution is Kimberley, sporadically on north-west and south coasts.

ANATIDAE

Musk Duck *Biziura lobata*

43 records from four sites: NRIID, NRIIG, PN04, RV02. Seen on deep water, brackish lakes west of Bremer Bay and east of Hopetoun in groups of 2–25. Also FRNP. Wider distribution is far south west WA, north to Arrowsmith Lake, east to Duke of Orleans Bay.

Freckled Duck *Stictonetta naevosa*

Not recorded by us but noted as very rarely seen on estuaries within FRNP. Wider distribution is south-west WA, very similar to Blue-billed Duck except absent from far south-west. Sporadic in arid zone.

Cape Barren Goose *Cereopsis novaehollandiae*

Not recorded by us. A single record from the FRNP. Wider distribution is far south, particularly Archipelago of the Recherche, occasional on mainland between Bremer Bay and Cape Arid.

Black Swan *Cygnus atratus*

20 records from five sites: GA01, NR10, NR11, NR11D, OT05. On various types of wetland and rivers with suitable water depth, seen in ones and twos with one group of 13. Also FRNP. Wider distribution is western half of WA, sporadic in Kimberley.

Australian Shelduck (Mountain Duck) *Tadorna tadornoides*

248 records from seven sites: CO03A, GA04, NR10, NR11, RV02, RV06B, RV08. Seen singly and in groups of up to 20 with one group of 200. Also FRNP. Wider distribution is western WA south of Tropic of Capricorn.

Australian Wood Duck
Chenonetta jubata

50 records from 14 sites: CO01B, CO02A, GA02, GA04, NR02, NR10, OT05, OT12B, OT13H, OT15, PN01A, PN04, RV06, RV08. Seen on pools in rivers, farm dams, brackish and saline lakes in the buffer zone and zone of co-operation. Recorded in the FRNP and noted as moderately common on rivers and creeks. Seen singly and in groups of up to 10 birds. Wider distribution is western WA also southern Kimberley.

Pink-eared Duck *Malacorhynchus membranaceus*

Four birds from two sites: NR02, NR11, a small saline lake in Gairdner Nature Reserve in April 1993 and 200 on a wetland in the Jerdacuttup Lakes Nature Reserve in December 1994. Noted as rarely seen and nomadic on large

pools in the FRNP. Wider distribution is western WA including arid zone also southern Kimberley.

Australasian Shoveler *Anas rhynchos*

Four birds seen on a wetland in the Jerdacuttup Lakes Nature Reserve, NR11,

in December 1994. Noted as a rarely seen visitor to river pools in the FRNP. Wider distribution is western WA south of Tropic of Capricorn.

Grey Teal *Anas gracilis*

184 records from nine sites: GA01, GA02, GA05, NR11, NR11G, OT12B, PN01, RV03, RV06. On river pools, lakes and estuaries; in pairs and groups of 20–60 throughout the FBR including FRNP. Wider distribution is most of WA except waterless deserts.

Chestnut Teal *Anas castanea*

40 records from 12 sites: CO03A, CO03D, FRNP, GA01, GA04, GA05, NR02, NR11, NR11G, OT15, PN04, PN11. Seen in ones and in pairs and small group of 6–10 on river pools, estuaries and lakes throughout the FBR. An adult with eight dependant young seen in December. Wider distribution is western WA south of Murchison River including Wheatbelt saline rivers and lakes, south coast between Albany and Eyre.

Pacific Black Duck *Anas superciliosa*

85 records from 14 sites: CO02, FRNP, GA01, GA04, GA05, NR02, NR10, NR11, NR11G, OT16A,

PN01A, PN04, RV06, RV08. Seen in ones and twos and small groups of 5–24 on river pools, estuaries and lakes throughout the FBR. An adult with three dependant young observed in November. Wider distribution is western WA and Kimberley.

Hardhead *Aythya australis*

Three birds seen on the Pallinup River, PN04, in April 1993. A single record from the FRNP. Wider distribution is western WA including northern arid zone and Kimberley.

Blue-billed Duck *Oxyura australis*

Not recorded by us but noted as being rarely seen and occurring on large, deep pools within the FRNP. Wider distribution is far south-west WA, north to Lake Pinjarrega, east to Esperance. Sporadic in arid zone.

PODICIPEDIDAE

Australasian Grebe *Tachybaptus novaehollandiae*

17 records from five sites: CO02, FRNP, NR02, PN01A, PN04. On river pools, mostly in ones and twos with one group of five. Seen with one-to three dependant young in January and April. Wider distribution is western WA and Kimberley.

Hoary-headed Grebe *Poliiocephalus poliocephalus*

84 records from eight sites: CO02, CO03D, FRNP, GA02, NR11D, PN01A, RV02, RV03.

On river pools and lakes mostly

in ones and twos, occasionally larger groups of up to 60. Adult with two dependent young seen in March. Wider distribution is western WA including arid zone also southern Kimberley.

Great Crested Grebe *Podiceps cristatus*

A single bird seen on the Culham Inlet, GA06, during May 1993. Wider distribution is far south-west WA, sporadic elsewhere.

DIOMEDEIDAE

Wandering Albatross *Diomedea exulans*

Recorded offshore of FRNP. Wider distribution is Southern and Indian Oceans, north on west coast to 28 degrees S, breeding on Antarctic and sub-Antarctic islands.

Atlantic Yellow-nosed Albatross *Thalassarche chlororhynchos*

Occasionally found dead on the shoreline of FRNP. Wider distribution is Southern and Indian Oceans, north on west coast to 21 degrees S, breeding on southern Indian Ocean islands.

PROCELLARIIDAE

Flesh-footed Shearwater *Ardeanna carneipes*

Usually found dead on the beaches of the FRNP, uncommon. Wider distribution is Indian and Pacific Oceans, breeding on Southern Ocean islands between Cape Leeuwin and Great Australian Bight.

Short-tailed Shearwater *Ardeanna tenuirostris*

A single record from the FRNP. Wider distribution is Pacific and Southern Oceans, breeding in Recherche Archipelago.

Great-winged Petrel *Pterodroma macroptera*

Record from offshore FRNP. Wider distribution is southern Atlantic and Indian Oceans, breeding in Southern Ocean on islands between Albany and Cape Arid.

SPHENISCIDAE

Little Penguin *Eudyptula minor*

Noted as a rarely seen visitor to the FRNP shoreline during moulting. Wider distribution is coastal WA between Shark Bay and Eyre.

SULIDAE

Australasian Gannet *Morus serrator*

Recorded offshore FRNP. Wider distribution is Southern and Indian Oceans, north on west coast to 21 degrees S. Breeding on islands in eastern Southern Ocean.

ANHINGIDAE

Darter *Anhinga melanogaster*

A single bird seen on the Steere River, GA05, at the John Forrest Rd crossing and another bird seen on the Phillips River 1km north of Culham Inlet in May 1993. Noted as rarely seen on large pools and the shoreline of the FRNP. Wider distribution is most

of coastal WA except east of Esperance, inland on lakes and rivers.

PHALACROCORACIDAE

Little Pied Cormorant

Phalacrocorax melanoleucos

44 records from twenty sites: CO01B, CO02, CO03D, FRNP, GA01, GA02, GA05, GA06, NR01, NR02, NR11, NR11C, OT02A, OT12B, PN01, PN01A, PN11, RV02, RV06, RV08. Mostly recorded singly, occasionally in groups of up to 10 mainly on river pools throughout the FBR including FRNP. Wider distribution is coastal WA, inland similar to other cormorants but with more records.

Great Cormorant *Phalacrocorax carbo*

Three records from three sites: GA01, GA05, GA06, singly at Kelly's Creek near Gordon Inlet, Steere River at the John Forrest Rd crossing and on the Culham Inlet. Noted as rarely seen on large pools in the FRNP. Wider distribution is coastal WA south of DeGrey River, inland on lakes and rivers.

Little Black Cormorant

Phalacrocorax sulcirostris

15 records from five sites: CO01B, GA01, GA05, OT04, PN04. In ones and twos with one group of 10 on river pools and estuaries. Noted as moderately common on waters in FRNP. Wider distribution is coastal WA, sporadically inland except waterless arid zone.

Pied Cormorant *Phalacrocorax varius*

Seven records from six sites: GA01, NR11, NR11A, NR11C, NR11G, PN01. Singly on estuaries coastal lakes and rivers. Noted as uncommon on the shore of FRNP. Wider distribution is coastal WA, sporadically inland except waterless arid zone.

PELECANIDAE

Australian Pelican *Pelecanus conspicillatus*

22 records from five sites: FRNP, GA01, GA06, NR11, PN04. Singly and in groups of up to 10 on estuaries and larger river pools. Wider distribution is most of coastal WA, sporadically inland in well watered regions providing fish for food. Vagrant in arid zone.

ARDEIDAE

Australasian Bittern *Botaurus poiciloptilus*

Noted as rarely seen in permanent fresh water swamps in FRNP. Wider distribution is far south west WA but coastally east to Cape Arid, sporadic elsewhere in State.

White-necked Heron *Ardea pacifica*

A single bird on the roadside at the intersection of Corackerup and Needilup Roads, GA02, in March 1993. Noted as rarely seen and nomadic on pools and estuaries in FRNP. Wider distribution is most of WA except south-east arid zone.

Eastern Great Egret *Ardea modesta*

Two records from two sites: FRNP, GA05, both single birds seen at Pitchie Ritchie on the Phillips River and on the Steere River where it crosses John Forrest Rd. Wider distribution is south-west WA, Gascoyne, Pilbara and Kimberley.

White-faced Heron *Egretta novaehollandiae*

47 records from 21 sites: 04B, CO01B, CO03C, FRNP, GA01, GA03, GA04, GA06, NR10, NR11, OT02B, OT04, OT12B, OT13H, OT16A, PN11, PN11A, RV05, RV06, RV08, RNOBC. Recorded at river pools, flooded gravel pits and roadsides, estuaries and farm dams throughout the FBR in ones and twos. Wider distribution is most of WA except central arid zone.

Eastern Reef Heron *Egretta sacra*

Two records from two sites: FRNP, GA06 both single birds on the coast at Mylies Beach in FRNP and Mason Bay east of Hopetoun. Wider distribution is coastal WA with fewer records from south coast.

Nankeen Night Heron *Nycticorax caledonicus*

Two records from two sites: OT08C, OT12B, both single birds seen at Jerdacuttup Lakes and Woodenup Pool in the northern Ravensthorpe Range. Noted as rarely seen in woodland around permanent pools in FRNP. Wider distribution is south-west WA, Pilbara and Kimberley.

THRESKIORNITHIDAE

Australian White Ibis *Threskiornis molucca*

One record: 40 birds seen on the Steere River floodplain, GA05, after a flood at the John Forrest Rd crossing in May 1993. Also FRNP (as Sacred Ibis). Wider distribution is south-west WA and Kimberley, sporadic elsewhere in State.

Straw-necked Ibis *Threskiornis spinicollis*

One record each from FRNP and Jerramungup Shire (Birds Australia database records Jan 1980–Feb 1993 – Shire of Jerramungup) and two records from the Ravensthorpe Shire ((Birds Australia database records Jan 1980–Feb 1993 – Shire of Ravensthorpe). Wider distribution is western south-west WA and sporadic along south coast, also Murchison, Gascoyne and Kimberley.

Royal Spoonbill *Platalea regia*

One record from one site: NR11, ten birds seen at a lake on Mason Bay Rd in the Jerdacuttup Lakes Nature Reserve in December 1994. Wider distribution is mainly Swan Coastal Plain and Kimberley with sporadic records from arid zone and south coast.

Yellow-billed Spoonbill *Platalea flavipes*

Three records from three sites: FRNP, GA05, NR11, two birds seen perching in a tree adjacent to a pool on the Phillips River on the northern boundary of the FRNP

in November 1996. Five birds feeding on the Steere River floodplain after a flood at the John Forrest Rd crossing in May 1993. Six birds feeding at a lake on Mason Bay Rd in the Jerdacuttup Lakes Nature Reserve in December 1994. Wider distribution is south-west WA, Gascoyne/Pilbara and Kimberley.

ACCIPITRIDAE

Eastern Osprey *Pandion cristatus*

Three records from two sites: NR11, FRNP, a single bird flying over with a fish in its talons at Mason Bay. A pair was sighted twice during 1993–1997 at Quoin Head in FRNP, where they have a nest (A. Sanders *pers. obs.*). Wider distribution is coastal WA, islands and lower reaches of rivers, east on south coast to FRNP.

Black-shouldered Kite *Elanus axillaris*

Three records from two sites: OT13H, RV01, single birds over disturbed areas adjacent to woodland and mallee heath. Also FRNP. Wider distribution is south west WA except far south west, west coast north to DeGrey River also southern Kimberley.

Square-tailed Kite *Lophoictinia isura*

18 from 15 sites: 05B, 53A, FRNP, GA05, NR11, NR11A, OT10, OT10A, OT13A, PN11A, RA09D, RNOCMS2, RNOE5, RNOBC, RNOE1. Seen singly, flying and hawking over riparian woodland, mallee heath, coastal dunes, woodland habitats

in the eastern FBR. Also FRNP. Wider distribution is south western WA and Kimberley.

White-bellied Sea-Eagle *Haliaeetus leucogaster*

One bird seen flying over Mason Bay Rd near the coast, NR11C. Also FRNP. Wider distribution is most of coastal WA except Peel to Wilson Inlets and east of Twilight Cove.

Whistling Kite *Haliastur sphenurus*

Two records from two sites: GA06, RV07. Single birds over Culham Inlet and remnant woodland vegetation near Jerramungup. Also FRNP. Wider distribution is western half of WA and Kimberley.

Brown Goshawk *Accipiter fasciatus*

Eight records from eight sites: 04B, CO01A, GA05, OT10, OT10C, PNI1C, RV06A, RV06B.

Seen singly in riparian woodland, mallee heath, coastal dunes and woodland habitats. Also a nesting pair observed in remnant riparian woodland vegetation near Jerramungup in November. Also FRNP. Wider distribution is western half of WA.

Collared Sparrowhawk *Accipiter cirrocephalus*

Four records from three sites: OT10, OT10A, RNOBC, at Bandalup Hill in Mallee heath habitat. Also FRNP. Wider distribution is western half of WA but east to state border on south coast, also Kimberley.

Spotted Harrier *Circus assimilis*

One bird over mallee habitat near Ravensthorpe, GA06. Also FRNP. Wider distribution is most of WA except far south-west.

Swamp Harrier *Circus approximans*

Two records from two sites: GA05, GA06, two birds hawking over the Steere River floodplain after a flood at the John Forrest Rd crossing in May 1993 and one bird seen on the Hopetoun – Ravensthorpe Rd near John Forrest Rd turnoff in February 1995. Also FRNP (as Marsh Harrier). Wider distribution is south-west WA and Kimberley, sporadic elsewhere.

Wedge-tailed Eagle *Aquila audax*

47 records from 33 sites: 05B, 14A, 32B, CK01, CK02, CO01B, CO03B, CO03C, CO03D, FRNP, GA04, NR01A, NR10C, NR11D, OT10, OT12B, OT13B, OT13C, PN09, PNI1, PNI1B, PNI1D, RA09D, RV06, RV06A, RV06B, RNOCMS1, RNOCMS2, RNOCMS8, RNO1, RNO4, RNOBC, RNOCA. Seen in ones and twos, occasionally threes in riparian woodland, mallee heath, coastal dunes, granite complex, shrubland, woodland habitat types. Also FRNP. Wider distribution is greater part of WA excluding only some sandy deserts.

Little Eagle *Aquila morphnoides*

One bird over Salmon Gum woodland on Carlingup Road east of Ravensthorpe, PN09. Also FRNP. Wider distribution is

western half of WA except far south-west, also Kimberley.

FALCONIDAE

Nankeen Kestrel *Falco cenchroides*

22 records from sixteen sites: CK01, CO03A, FRNP, GA01, GA04, NR10, NR11, NR11A, NR11B, PN01, PN09, PN11, RV06, RV07, RNOCMS2, RNO6. Seen singly, mainly over paddocks and in mallee heath, heath, coastal dunes, wetland complex, riparian woodland and woodland habitats. Also FRNP. Wider distribution is most of WA.

Brown Falcon *Falco berigora*

47 records from 30 sites: 29B, 31B, 53A, CK01, CO03A, CO03C, FRNP, GA03, GA05, NR10B, NR10C, NR11A, NR11B, OT10A, OT10C, OT13A, OT13D, PN01A, PN09, PN11, PN12, PNI6A, RV07, RNOCMS2, RNOCMS4, RNO4, RNO5, RNOBC, RNOCMS1, RNOE2. This was the most commonly observed bird of prey in the FBR. Seen in ones and twos in heath, mallee heath, riparian woodland, coastal dunes, wetland complex, shrubland, and woodland habitats. Two nesting pairs observed, one in Peniup Nature Reserve (DEC Pallinup Nature Reserve Report) in a *Eucalyptus occidentalis* in riparian woodland another along Bandalup Creek, both during October. Also FRNP. Wider distribution is most of WA.

Australian Hobby *Falco longipennis*

Five records from three sites: FRNP, PN01B, PN11, singly in

coastal dunes, riparian woodland and woodland habitats. A pair with two nestlings observed in Cocanarup Timber Reserve in December 1994. Wider distribution is most of WA.

Peregrine Falcon *Falco peregrinus*

Four records from four sites: NR10, RNOCMS4, RNOE3, a single bird at Aerodrome Nature Reserve in riparian woodland during May 1993 (DEC Aerodrome Rd Nature Reserve Report) three records from mallee heath habitat at Bandalup Hill in November 1999 and April 2000. Also FRNP. Wider distribution is WA except most deserts and Nullarbor Plain.

RALLIDAE

Australian Spotted Crake *Porzana fluminea*

One bird at a pool on the Phillips River at the FRNP northern boundary. Wider distribution is greater south-western WA, north to Carnarvon and east to Eyre.

Spotless Crake *Porzana tabuensis*

Noted as rarely seen on permanent pools in the FRNP. Wider distribution is south-west WA.

Black-tailed Native-hen *Tribonyx ventralis*

Nine records from 4 sites: GA02, GA03, GA04, GA05. Six birds seen on Peniup Creek in August 1996, single birds 1km east of Jacup wheatbin in September 1996, Old Ongerup Rd creekline in May 1993 and Phillips River

floodplain on John Forrest Rd in May 1993. Also FRNP. Wider distribution is western WA and southern Kimberley.

Eurasian Coot *Fulica atra*

456 records from 13 sites: CO02, FRNP, GA01, GA02, GA05, GA06, NR02, NR11D, OT05, PN01, PN01A, PN04, RV02. Singly and in groups of up to 200 in river pools, estuaries and lakes throughout the FBR. Seen with dependent young in January and April. Wider distribution is most of WA except waterless deserts.

OTIDIDAE

Australian Bustard *Ardeotis australis*

OT13C.

A single bird in mallee heath habitat 25km south of Ravensthorpe, OT13C, in June 1997. Also FRNP. Wider distribution is most of WA except heavily timbered south-west.

BURHINIDAE

Bush Stone-curlew *Burhinus grallarius*

A bird heard calling at night 3km southeast of Ravensthorpe in 1997. Noted as rarely seen in salt flats and woodland in the FRNP. Wider distribution is western WA and Kimberley.

HAEMATOPODIDAE

Australian Pied Oystercatcher *Haematopus longirostris*

Eight records from four sites: FRNP, GA01, NR11, NR11G, across coastal FBR. Wider distribution is coastal WA.

Sooty Oystercatcher *Haematopus fuliginosus*

17 records from three sites: FRNP, GA01, NR11, across coastal FBR. Wider distribution is coastal WA.

RECURVIROSTRIDAE

Black-winged Stilt *Himantopus himantopus*

Approximately 100 birds were seen at a lake on Mason Bay Rd, NR 11, in December 1994. Noted as an uncommon irregular visitor to estuaries in the FRNP. Wider distribution is western WA and Kimberley.

Red-necked Avocet *Recurvirostra novaehollandiae*

Approximately 100 birds were seen at the Culham Inlet in January 1995. Wider distribution is western WA and Kimberley.

Banded Stilt *Cladorhynchus leucocephalus*

Recorded from FRNP inlets. Wider distribution is south-west WA, Goldfields, Murchison and interior Gascoyne.

CHARADRIIDAE

Grey Plover *Pluvialis squatarola*

Two records from two sites: GA01, NR11. Two seen on the Bremer Bay sandbar in February 1995, two in November 1993 and one in December 1994 on Mason Bay beach. Also FRNP. Wider distribution is coastal WA.

Red-capped Plover *Charadrius ruficapillus*

Four records from three sites: two

from GA01, and one from OT04. Two at the Gordon Inlet in April 1993, one on the Bremer Bay sandbar in February 1995 and one at the Beaufort Inlet during April 1993. Also FRNP. Wider distribution is southern WA including arid zone.

Black-fronted Dotterel *Eleyornis melanops*

Nine records from six sites: FRNP, GA01, GA05, GA06, NR11, RV05. Found on rivers, estuaries, swamps and lakes across the FBR including FRNP. Wider distribution is western WA and Kimberley.

Hooded Plover *Thinornis rubricollis*
46 records from four sites: FRNP, GA01, NR11, NR11A. One at Quoin Head (FRNP) in June 1994; three in January 1995 and one in July 1996 at Mylies Beach (FRNP); 30 at the Bremer Bay sandbar in February 1995; one adult with two dependent young in September 1995, eight in November 1993 and two in November 1994, all from Mason Bay beach. Wider distribution is south-western WA, east to Eyre on south coast.

Red-kneed Dotterel *Erythrogonys cinctus*

Four records from two sites: NR11, RV08. Two at lake on Mason Bay Rd in December 1994 and two at a brackish lake on private property on the coastal plain east of Hopetoun. Also FRNP. Wider distribution is western WA and some Kimberley rivers.

Banded Lapwing *Vanellus tricolor*
Seven records from four sites: CO03, CO03C, PN01A, RV06, in mallee heath, riparian woodland and woodland habitat. Also FRNP. Wider distribution is WA south of Fortescue River, also Lake Gregory.

SCOLOPACIDAE

Black-tailed Godwit *Limosa limosa*
A single bird at the Wellstead Estuary, GA01, in April 1993. Wider distribution is north and west coasts, sporadic on south coast.

Bar-tailed Godwit *Limosa lapponica*

Single records from the FRNP and the Jerramungup Shire (Birds Australia database records Jan 1980–Feb 1993 – Shire of Jerramungup). Wider distribution is most of coastal WA, occasional on interior lakes.

Whimbrel *Numenius phaeopus*

Single birds seen at Mason Bay beach, NR11, in December 1994 and January 1995. Also FRNP. Wider distribution is mainly west coast, sporadic on south coast.

Common Sandpiper *Actitis hypoleucos*

Two on Mason Bay beach, NR11, in November 1993, single birds at the same site in November 1994 and January 1995. Wider distribution is most of WA except waterless arid zone.

Common Greenshank *Tringa nebularia*

16 records from five sites: CO03D, FRNP, GA01, GA05, NR11. In ones, twos and one group of 10 on rivers, lakes, creeks and estuaries. Wider distribution is most of WA except waterless arid zone.

Wood Sandpiper *Tringa glareola*

One on Mason Bay beach NR11 in November 1993 and six at a lake on Mason Bay Rd in the Jerdacuttup Lakes Nature Reserve in December 1994. Wider distribution is south-west WA, coastal Pilbara and Kimberley.

Ruddy Turnstone *Arenaria interpres*

Only recorded on shoreline rocks at Mason Bay, NR11, twelve birds November 1993 and one in December 1994. Also FRNP. Wider distribution is coastal WA.

Great Knot *Calidris tenuirostris*

Recorded from FRNP. Wider distribution is sporadic on coastal WA.

Red Knot *Calidris canutus*

Two records from the Shire of Jerramungup (Birds Australia database records Jan 1980–Feb 1993 – Shire of Jerramungup). Wider distribution is sporadic on coastal WA.

Sanderling *Calidris alba*

Two records from the Shire of Ravensthorpe (Birds Australia database records Jan 1980–Feb 1993 – Shire of Ravensthorpe)

and two records from the FRNP where it is noted as very rarely seen on the shoreline in summer. Wider distribution is coastal WA.

Red-necked Stint *Calidris ruficollis*

15 records from three sites: FRNP, GA01, NR11. Six on Mason Bay beach in November 1993, 10 on the sandbar at Bremer Bay in February 1995 and five on Hamersley Beach in the FRNP in May 1995. Wider distribution is coastal WA with sporadic interior records.

Pectoral Sandpiper *Calidris melanotos*

Two birds were seen at a lake on Mason Bay Rd NR11 in December 1994. Wider distribution is sporadically on coastal WA.

Sharp-tailed Sandpiper *Calidris acuminata*

Ten birds seen at a lake on Mason Bay Rd NR11 in December 1994. Also FRNP. Wider distribution is coastal WA with sporadic interior records.

Curlew Sandpiper *Calidris ferruginea*

Ten birds seen at a lake on Mason Bay Rd NR11 in December 1994. Also FRNP. Wider distribution is coastal WA with sporadic interior records.

Broad-billed Sandpiper *Lamicola falcinellus*

Recorded from FRNP. Wider distribution is north-west, west and south coasts of WA.

TURNICIDAE

Painted Button-quail *Turnix varia*
Five records at four sites: CK02, CO01C, GA05, PN09. An adult was captured in a pitfall trap at site CK02, and another in an Elliott trap at Site CO01C. Recorded in mallee heath, riparian woodland and woodland habitats. Also FRNP. Wider distribution is south-west WA.

STERCORARIIDAE

Brown Skua *Stercorarius antarcticus*

Recorded offshore FRNP. Wider distribution is south and west coasts north to Shark Bay. Breeding on Antarctic and sub-Antarctic islands.

LARIDAE

Fairy Tern *Sterna nereis*

22 records from one site: twenty birds were observed on rocks offshore at Mason Bay, NR11, in November 1993 and two birds were observed with a nest on a rock offshore in December 1994. Also FRNP. Wider distribution is west coast between Peel Inlet and Dampier Archipelago, south coast between Augusta and Israelite Bay.

Caspian Tern *Hydropogone caspia*

11 records from four sites: GA01, NR11, NRIIC, NRIIG. Observed singly and in groups of up to six along the coast across the FBR including FRNP. Wider distribution is coastal WA and islands.

Crested Tern *Thalasseus bergii*

81 records from four sites: FRNP, GA01, NRIIC, NRIIG. Observed singly and in groups of up to 60 along the coast across the FBR. Wider distribution is coastal WA and islands.

Pacific Gull *Larus pacificus*

Ten records from four sites: GA01, GA06, NR11, NRIIC. Observed singly along the coast across the FBR including FRNP. Wider distribution is west coast between Quobba and Wedge Island and south coast.

Kelp Gull *Larus dominicanus*

A single record from the FRNP. Scarce visitor to the south coast (Johnstone and Storr, 1998). Wider distribution is south and west coasts north to Carnarvon.

Silver Gull *Chroicephalus novaehollandiae*

72 records from seven sites: FRNP, GA01, GA05, GA06, NR11, NRIIG, OT04. Observed singly and in flocks of up to 20, mainly along the coast and in estuaries of the FBR. Wider distribution is coastal WA and islands, occasionally inland e.g. Newdegate.

Whiskered Tern *Chlidonias hybrida*

Recorded from FRNP. Wider distribution is coastal WA north of Shark Bay and between Geraldton and Cape Naturaliste, sporadic on south coast. Inland on larger lakes in Kimberley, Pilbara, Gascoyne, northern Goldfields and inner south west.

COLUMBIDAE

Rock Dove *Columba livia*

Introduced species, one record from FRNP. Wider distribution is southern cities, towns and farmlands.

Common Bronzewing *Phaps chalcoptera*

65 records from 27 sites: CO01B, CO03, FRNP, NR01C, NR08, NR10, OT02A, OT02C, OT10A, OT10C, OT12B, OT13A, OT13D, OT16A, PN09, PN11, PN12, RV04, RV06, RV06B, RV07, RNOCMS2, RNOCMS3, RNOCMS4, RNOE6, RNO7, RNOCA. Seen singly and in pairs from mallee heath, wetland complex, woodland, riparian woodland and heath, habitats. A nest with one egg found in June and a bird on a nest in October. Wider distribution is most of WA except Great Sandy Desert and Nullarbor Plain.

Brush Bronzewing *Phaps elegans*

29 records from 14 sites: 28B, 51A, CO03, FRNP, GA01, NR10, OT10, OT10A, OT12B, PN09, PN16C, RNOCMS8, RNO4, RNO5 across the FBR. Singly in mallee heath, wetland complex, shrubland, riparian woodland and woodland habitats. Wider distribution is coastal south-western WA from Dongara to Eyre, also Wheatbelt north to Moora and Houtman Abrolhos Islands.

Crested Pigeon *Ocyphaps lophotes*

89 records from 36 sites: 04B, CK00, CO01A, CO01B, CO01C,

CO03, CO03A, CO03D, FRNP, GA01, GA03, NR01A, NR04, NR10, NR10, NR10C, NR11, OT11B, OT13D, OT16B, PN01, PN07, PN09, RV01, RV06, RV06B, RV07, RV08, SC03, RNOCMS6, RNO2, RNO4, RNO5, RNO6, RNOBC, RNOCA, across the FBR including FRNP. Seen in ones and twos and occasionally larger flocks of up to 20 in all habitats. Crested Pigeon has extended its range south into FBR in last two decades, it was unknown in the south-west before the early 1900s (Storr 1991). Wider distribution is most of WA except north-west Kimberley, Great Victoria Desert and Nullarbor Plain and far south-west.

PODARGIDAE

Tawny Frogmouth *Podargus strigoides*

28 records from 12 sites: CO01B, CO03, FRNP, NR11, OT13D, OT13H, PN01, PN09, PN11, PN11D, RV06B, RNOCMS1. Recorded in ones and twos in mallee heath, riparian woodland, coastal dunes and woodland habitats. Dependent young in October and November. Also FRNP. Wider distribution is greater part of WA from northern Pilbara to state border.

EUROSTOPODIDAE

Spotted Nightjar *Eurostopodus argus*

19 records from 11 sites: CO01B, CO03, CO03A, FRNP, GA02, GA05, NR01A, OT10C, RV06B, RNOE1, RNOCA. Singly in mallee

heath, heath, riparian woodland, granite complex and woodland habitats. A bird sitting on an egg in December. Also FRNP. Wider distribution is much of WA excluding far south-west and Nullarbor Plain.

AEGOTHELIDAE

Australian Owlet-nightjar
Aegotheles cristatus

20 records from nine sites: CO01B, CO03, CO03A, FRNP, GA02, GA05, NR01A, OT10C, RV06B, RNOE1, RNOCA. Mostly heard calling in mallee heath and woodland habitats with one record from wetland complex. Wider distribution is much of WA.

APODIDAE

Fork-tailed Swift *Apus pacifus*

Six birds seen flying over Pabelup Lake in FRNP during stormy conditions in April 1996. Visitor to most parts of state.

CACATUIDAE

Carnaby's Black-Cockatoo
Calyptorhynchus latirostris

168 records from 18 sites: GA02, CK00, CO01C, CO02, CO02A, GA03, GA04, GA05, NR11, OT13C, PN01A, PN11, PN11A, PN11B, PNIIC, RNO6, RNO7, RNOE1.

Observed in riparian woodland, mallee heath, granite complex, coastal dunes and woodland habitats. Seen singly and in flocks of up to 50. Two adults were observed with a dependent young in salmon gum woodland in Cocanarup Timber Reserve in

December 1994. Also FRNP. Wider distribution is south-west WA between Kalbarri and Condingup.

Galah *Eolophus roseicapilla*

53 records from 21 sites: 04B, CO01A, CO01B, CO03, GA02, GA04, NR10, NR10C, OT13C, OT13H, PN05A, PN09, PN11, PN11A, PN11D, RA13, RV06, RV06B, RNOE6, RNO2, RNOBC.

Recorded singly and in flocks of up to six in riparian woodland, mallee heath, wetland complex, shrubland and woodland habitats. Also FRNP. Wider distribution is most of WA south of DeGrey River with an expansion to the south coast in the last 25 years.

PSITTACIDAE

Purple-crowned Lorikeet
Glossopsitta porphyrocephala

278 records from 53 sites: 04B, 05B, 12A, 25B, 26B, 45A, 63B, CO01A, CO01B, CO01C, CO02A, CO03, CO03A, CO03B, FRNP, GA03, GA04, NR02, NR04, NR05, NR11B, OT06, OT08C, OT09, OT10A, OT10C, OT12B, OT13C, OT13D, OT13H, OT15, OT16B, PN02, PN04, PN05A, PN09, PN11, PN11A, RA09M, RV06, RV06A, RV06B, RNOCMS4, RNOE10, RNOE6, RNOE7, RNOE9, RNO1, RNOBC, RNOCA, RNOE1, RNOE2, RNOE5. Recorded singly but mostly in flocks of up to 24. Also FRNP. Most common when eucalypts in flower in mallee heath, riparian woodland, and woodland habitats. Wider distribution is south-western WA.

Regent Parrot *Polytelis anthopeplus*
29 records from eight sites: CO01B, CO01C, NR07, OT02A, PN09, PN11, PN11C, RV06. Seen singly and in flocks of up to six in mallee heath, riparian woodland and woodland habitats. Also FRNP. Wider distribution is south-western WA.

Western Rosella *Platycercus icterotis*

Three records from two sites: OT12B, PN11, a pair and a single sighting in riparian woodland and woodland habitats. Also FRNP. Wider distribution is lesser south-western WA with a hybrid zone with *P. icterotis xanthogenys* on south coast east of Albany.

Australian Ringneck *Barnardius zonarius*

196 records from 56 sites: 04B, 05B, CK00, CO01A, CO01B, CO01C, CO02A, CO03, CO03A, CO03B, FRNP, GA02, GA03, GA04, GA05, NR01A, NR02, NR04, NR05, NR06, NR10, NR10, OT02A, OT08C, OT10, OT12B, OT13A, OT13C, OT13D, OT13H, OT15, PN01, PN01A, PN03, PN04, PN05A, PN09, PN11, PN11A, PN11B, PN11C, PN11D, PN12, PN16C, RV04, RV06, RV06A, RV06B, RV07, RV08, RV09, SC07, RNO5, RNO7, RNOE1, RNOE2. Seen in ones and twos and less commonly in flocks of up to 10. Recorded most commonly from woodland and mallee heath habitats and less commonly from riparian woodland, wetland complex, shrubland, granite complex and heath habitats. Also FRNP. Wider dis-

tribution is much of WA south of DeGrey River with hybrid zone with *P. zonarius semitorquatus* in Wheatbelt.

Red-capped Parrot
Purpureicephalus spurius

89 records from 43 sites: 04B, 05B, 31B, CK00, CO01A, CO01B, CO03, CO03D, FRNP, GA02, GA04, GA05, NR01, NR02, NR10, NR10, NR10C, NR11A, NR11C, OT10B, OT12B, OT13A, OT13B, OT13C, OT16B, PN01, PN01A, PN04, PN05A, PN09, PN11, PN11A, PN11B, PN11D, RA07, RV01, RV04, RV06, RV06A, RV07, SC07, RNOCMS7, RNOCMS2. Seen in ones and twos, less commonly in groups of up to six. Most commonly recorded in mallee heath, woodland, and riparian woodland with a few records from wetland complex, granite complex, shrubland, and coastal dunes habitats. Also FRNP. Wider distribution is lesser south-west WA.

Elegant Parrot *Neophema elegans*

35 records from 13 sites: CO03, CO03A, CO03D, GA03, GA04, NR01C, NR10, NR11, OT12B, OT13A, PN11B, PN11D, RV06. Seen in ones and twos, less commonly in groups of up to eight, in mallee heath, heath, riparian woodland, wetland complex, coastal dunes and woodland habitats. Also FRNP. Wider distribution is south-western WA excluding far south west.

Rock Parrot *Neophema petrophila*

Three records from two sites: NR11, NR11A, a pair and single

bird flying along beach. Also FRNP. Wider distribution is coastal WA, including islands, from Shark Bay to Israelite Bay.

Ground Parrot *Pezoporus wallicus*

An injured bird was picked up off the Hopetoun–Ravensthorpe Rd, GA06, in June 1995. It was taken to a bird carer at Fitzgerald but died a week later. Found in some heaths in the FRNP. In 1985 a survey recorded Western Ground Parrots at four locations in the FRNP; Hamersley Drive and Moir Track intersection, south of Old Ongerup Rd, West River Rd and Drummond Track. Currently only known from two small populations in Fitzgerald River and Cape Arid National Parks.

CUCULIDAE

Horsfield's Bronze-Cuckoo

Chalcites basalis

29 records from 25 sites: 12A, 14A, 26B, 45A, CK01, CK03E, CO03A, FRNP, GA05, NR10B, OT10A, OT13A, OT13B, OT13C, OT13D, PN01, RV06A, RV06B, RNOCMS6, RNOE6, RNOE9, RNO7, RNOBC, RNOCMS3, RNOE1. Seen singly, most commonly in mallee heath with a few records from woodland, riparian woodland, heath and granite complex habitats during all months from July to December. Wider distribution is much of WA.

Black-eared Cuckoo *Chalcites osculans*

A single bird was seen 25km south of Ravensthorpe at OT13H

in January 1994 in riparian woodland habitat. Also FRNP. Wider distribution is much of WA excluding Nullarbor Plain and far south west.

Shining Bronze-Cuckoo *Chalcites lucidus*

44 records from 31 sites: 04B, 05B, 14A, 45A, CK00, CO01A, CO01B, CO01C, CO03, CO03A, CO03C, FRNP, GA01, GA02, GA04, GA05, NR10C, NR11B, NR11G, OT10A, OT10B, PN01, PN01A, PN11, PN11A, PN11B, PN14, PN16C, RA07, RV06B, RNO1. Seen singly in riparian woodland, mallee heath and woodland, with few records in heath, wetland complex, shrubland and coastal dune habitats. Recorded in all months from August to December with single records each in April and May. Wider distribution is south-western WA.

Pallid Cuckoo *Cuculus pallidus*

Six records from four sites: GA01, GA02, GA04, OT13H, across the study area. Recorded singly from woodland, riparian woodland, granite complex habitats in June, August and September. Also FRNP. Wider distribution is much of WA excluding Nullarbor Plain.

Fan-tailed Cuckoo *Cacomantis flabelliformis*

79 records from 53 sites: 04B, 05B, 14A, 16A, 25B, 26B, 45A, CK00, CK03E, CO01A, CO01B, CO01C, FRNP, GA01, GA02, GA04, GA05, NR01, NR01C, NR02, NR11B, OT02A, OT10, OT10C, OT12B,

OT13A, OT13C, OT13D, OT13H, OT15, OT16A, OT16B, PN01A, PN09, PN11, PN11B, PN11C, PN11D, PN14, PN15, PN16A, PN16C, RA08, RA09M, RA13, RV06B, RV07, SC01, RNO4, RNO5, RNOBC, RNOCA, RNOE3. Seen singly in all habitats, most commonly recorded in mallee heath and woodland, less commonly in riparian woodland, with single records only from wetland complex, shrubland, coastal dunes, heath and granite complex. Recorded in all months from March to November but none in December to February. Also FRNP. Wider distribution is south-western WA extending into Goldfields.

STRIGIDAE

Barking Owl *Ninox connivens*

Noted as very rarely seen in open woodland in the FRNP. Described as rare and declining in the south-west (Johnstone and Storr, 1998). Wider distribution is lesser south west WA.

Southern Boobook *Ninox novaeseelandiae*

15 records from nine sites: CO01B, FRNP, GA01, OT13C, PN11, PN11B, RV06, RV06B, RNOCA. Recorded calling in ones and twos from mallee heath and woodland habitats. A nest with one egg in mallee heath habitat in October 1995. Also FRNP. Wider distribution is much of WA excluding Great Sandy Desert and Nullarbor Plain.

Barn Owl *Tyto alba*

17 records from five sites: CO01B, CO03, CO03A, PN11, PN11B. Recorded singly from riparian woodland habitats along rivers and creeks and woodland habitat in Cocanarup Reserve where six birds were heard calling on one night during November 1993. Also FRNP. Wider distribution is much of WA excluding Nullarbor Plain.

HALCYONIDAE

Laughing Kookaburra *Dacelo novaeguinae*.

24 records from 14 sites: 04B, 05B, CO01A, CO01C, GA02, OT02A, OT13H, PN01A, PN09, PN11, PN11A, PN11B, RV06, RV06A. Recorded from mallee heath, woodland and riparian woodland habitats in ones, twos and a group of four. Also FRNP. Wider distribution is south-west WA from Dongara to Ravensthorpe. Introduced from Victoria by the then director of the Perth Zoo (E. A. Le Souef) from 1897 onwards (Serventy and Whittell, 1976).

Sacred Kingfisher *Todiramphus sanctus*

14 records from 13 sites: 05B, CO01A, CO01B, GA03, GA05, OT13H, PN01, PN01A, PN11, PN11A, PN11B, RV06B, RV08. Recorded singly from riparian woodland, mallee heath, woodland and wetland complex habitats during September, October, November, December, February and May. Also FRNP. Wider distribution is much of WA excluding arid interior.

MEROPIDAE

Rainbow Bee-eater *Merops ornatus*

56 records from 18 sites: 04B, 05B, CO01A, CO01C, FRNP, GA06, OT10, OT10C, OT13H, PN01, PN01A, PNI1B, PNI1C, PNI6A, RV06, RV06B, RNOE6, RNOBC. Recorded singly and in groups of up to six from riparian woodland, mallee heath, woodland, wetland complex and coastal dune habitats between September and February. Wider distribution is much of WA excluding arid interior.

MALURIDAE

Splendid Fairy-wren *Malurus splendens*

64 records from 21 sites: 05B, CK00, CO01A, CO03, CO03A, CO03B, CO03C, CO03D, FRNP, GA01, GA02, GA04, GA05, NR11, NR11A, OT09, PN01A, PN04, PNI1, RV06, RV06B. Singly and in groups of up to six. Most commonly from riparian woodland habitat, less commonly from woodland, mallee heath, coastal dunes, heath and wetland complex habitats. Wider distribution is in the south-west between Moora and Ravens-thorpe, also in the western arid zone excluding most of the Pilbara.

Blue-breasted Fairy-wren *Malurus pulcherrimus*

170 records from 59 sites: 12A, 14A, 28B, 29B, 45A, 51A, 53A, CK00, CK01, CK02, CO01A, CO01B, CO01C, CO02A, CO03, CO03A, CO03B, ETD, FRNP, GA04, GA05,

NR01, NR05, NR10, NR10B, NR10C, NR11, NR11A, OT10, OT10B, OT10D, OT13A, OT13B, OT13C, OT13D, PN01, PN09, PNI1, PNI1B, PNI1C, PNI1D, PNI1E, PNI6B, PNI6C, RA07, RA09D, RV01, RV06B, RV09, RNOCMS2, RNOE1, RNOE6, RNOE9, RNO4, RNO5, RNO7, RNOCMS3, RNOE1, RNOE3. Singly and in groups of up to 10 in all habitats except wetland complex. Most commonly recorded in mallee heath, riparian woodland and woodland, less commonly in shrubland, coastal dunes, heath and granite complex habitats. Also FRNP. Wider distribution is south-western WA but extending on south coast to state border, but excluding inner south-west.

Southern Emu-wren *Stipiturus malachurus westernensis*

22 records from 13 sites: 51A, CO03, CO03A, ETB, FRNP, GA02, GA05, NR01, OT10D, RNOCMS5, RNOE1, RNOE3, RNOE4. Recorded in ones, twos and threes in mallee heath, heath and wetland complex habitats. Wider distribution is coastal south-west WA with inland incursion into south-east Wheatbelt.

DASYORNITHIDAE

Western Bristlebird *Dasyornis longirostris*

A single bird was heard calling at East Mt. Barren in the FRNP in July 1997. One individual was recorded on the Bell Track in tall open shrubland in March 1981. A few individuals were recorded near Middle Mount Barren in

1977. Found in some dense heaths in FRNP. Wider distribution (naturally occurring) is limited to two separate locations, Waychinicup/Two Peoples' Bay and FRNP/Kundip.

ACANTHIZIDAE

White-browed Scrubwren

Sericornis frontalis

143 records from 61 sites: 12A, 14A, 45A, 62B, CO01B, CO01C, CO03, CO03B, CO03C, CO03D, FRNP, GA01, GA05, NR01, NR05, NR10C, NR11, NR11A, NR11B, NR11C, OT02C, OT04, OT09, OT10C, OT10D, OT12A, OT12B, OT13A, OT13B, OT13C, OT15, OT16B, PN01, PN01A, PN04, PN07, PN09, PN11, PNI6C, RA09M, RA13, RV01, RV04, RV06, RV06A, RV06B, RV07, SC07, RNOCMS4, RNOCMS5, RNOE6, RNO1, RNO2, RNO3, RNO5, RNO7, RNOCMS1, RNOE1, RNOE3, RNOE4, RNOE5. Seen in ones and twos in mallee heath, woodland and riparian woodland and a few records from wetland complex, coastal dunes, shrubland and granite complex habitats. Wider distribution is south-west WA with south coastal extension to state border.

Shy Heathwren *Hylacola cauta*

98 records from 53 sites: 12A, 14A, 51A, 62B, 63B, CK01, CK02, CO01B, CO03, CO03A, ETD, FRNP, GA03, GA05, NR01, NR01A, NR05, NR06, NR10, NR10, NR10B, OT08A, OT10A, OT10C, OT12A, OT13A, OT13B, OT13C, OT13D, PN01, PN01B, PN11, PNI1D, PNI1F, PNI6C, RA07, RA08, RA13, RV01, RV04, RV06, RV06B, RV09, RNOCMS2,

RNOCMS4, RNOCMS5, RNOE6, RNOE7, RNO5, RNO6, RNOBC, RNOE4, RNOE5 in the northern and eastern FBR. Recorded singly mainly in mallee heath with a few records each from heath, granite complex, wetland complex, shrubland, riparian woodland and woodland habitats. Wider distribution is south-east of south-western WA extending into Goldfields.

Rufous Fieldwren *Calamanthus campestris campestris*

Nine records from six sites: 12A, CO03, CO03A, FRNP, GA05, PN09. Recorded singly from mallee heath, heath and woodland habitats. Wider distribution is southern semi-arid and arid zones approximately south of the Tropic of Capricorn.

Redthroat *Pyrrholaemus brunneus*

Two records from two sites: GA04, OT15. Both single sightings in Riparian woodland habitat in April and May. More recently recorded in FRNP (P. Wilkins *pers comm.*) Wider distribution is much of WA south of Tropic of Capricorn approximately, excluding Great Victoria Desert and Nullarbor Plain and south and west coasts and hinterland.

Weebill *Smicrornis brevirostris*

343 from 85 sites: 04B, 16A, 25B, 32B, 45A, 59A, CK02, CO01A, CO01B, CO01C, CO02, CO02A, CO03, CO03A, CO03B, ETA, FRNP, GA02, GA03, GA04, GA05, NR02, NR04, NR10, NR10, OT02A, OT06,

OT07, OT08A, OT08C, OT09, OT10A, OT10B, OT10C, OT13A, OT13B, OT13C, OT13D, OT13H, OT15, OT16B, PN01, PN01A, PN03, PN09, PN11, PN11A, PN11B, PN11C, PN11D, PN11E, PN14, PN16C, RA07, RA08, RA09D, RA09M, RA13, RV04, RV06, RV06A, RV06B, RV09, SC01, SC02, RNOCMS2, RNOCMS3, RNOCMS4, RNOCMS6, RNOE1, RNOE6, RNOE7, RNOE8, RNOE9, RNO1, RNO2, RNO3, RNO4, RNO5, RNO6, RNO7, RNOBC, RNOCA, RNOE1, RNOE2. Singly and in loose groups of up to 12 amongst eucalypt canopies. Recorded most commonly in mallee heath, then in woodland and riparian woodland with a few records from heath, wetland complex, granite complex and shrubland habitats. Nesting recorded in October. Wider distribution is much of WA excluding Great Sandy and Gibson Deserts, Nullarbor Plain and inner south-west.

Western Gerygone *Gerygone fusca*

15 records from 10 sites: CO01A, CO01C, FRNP, GA04, GA05, OT10, OT13H, PN01, RV09, RNOE9 in the northern and eastern study area. Recorded singly in riparian woodland, mallee heath, woodland and wetland complex habitats. Wider distribution is much of WA excluding Kimberley and southern arid zone.

Yellow-rumped Thornbill
Acanthiza chrysorrhoa

132 records from 36 sites: CK00,

CO01B, CO03, FRNP, GA01, GA03, GA04, GA05, NR01, NR02, NR04, NR10, NR10C, NR11, NR11D, OT02A, OT02B, OT04, OT09, OT12B, OT13H, PN01, PN01A, PN05A, PN09, PN11A, PN11B, PN11C, RA13, RV01, RV04, RV06, RV06A, RV06B, RV08, RNOBC. Seen singly and in groups of up to six. Most commonly in woodland and mallee heath, with a few records each from wetland complex, riparian woodland, granite complex, shrubland and coastal dune habitats. Nest building in May and November, dependent young in October. Also FRNP. Wider distribution is WA south of Tropic of Capricorn approximately excluding Gibson Desert and Nullarbor Plain.

Western Thornbill *Acanthiza inornata*

Two records from one site: also FRNP. Wider distribution is south-west WA from Jurien Bay to Beaufort Inlet.

Inland Thornbill *Acanthiza apicalis*

83 records from 45 sites: 14A, 53A, CO01A, CO01C, CO03, CO03A, CO03B, GA01, GA03, GA04, NR01, NR09, NR10, NR10C, NR11, OT02A, OT03, OT10, OT10A, OT10B, OT10C, OT10D, OT12B, OT13C, OT15, PN01A, PN07, PN09, PN11, PN11B, PN11C, RV01, RV06, RV06B, RV07, RNOCMS2, RNOCMS8, RNOE8, RNO1, RNO2, RNO3, RNO4, RNO6, RNOCMS3, RNOE1. Mostly recorded in ones and less commonly in twos and threes. The most common habitat was

mallee heath followed by woodland and riparian woodland with a few records in heath, wetland complex, granite complex, shrubland and coastal dune habitats. A recent nest in mallee heath habitat and an adult with one dependent young in woodland habitat in September. Also FRNP. Wider distribution is southern WA north to Tropic of Capricorn approximately excluding the Nullarbor Plain.

PARDALOTIDAE

Spotted Pardalote *Pardalotus punctatus*

140 records from 54 sites: 04B, 16A, 25B, 26B, 28B, 29B, 31B, 32B, 45A, 53A, 63B, CK00, CO01A, CO01B, CO01C, CO03, ETA, ETD, FRNP, GA02, GA03, GA04, OT09, OT10A, OT10B, OT10C, OT10D, OT13A, OT13B, OT13C, OT13D, PN09, PNI1A, PNI4, PNI6C, RA07, RA09D, RA13, RV06B, RV09, RNOCMS1, RNOCMS4, RNOCMS5, RNOCMS6, RNOCMS7, RNOCMS8, RNOE11, RNOE6, RNOE8, RNOE9, RNO7, RNOBC, RNOCMS1, RNOE3. In ones and twos from mallee heath, riparian woodland and woodland and two records from heath habitats. Observed nest building in September and November. Wider distribution is south-western WA from near Jurien Bay through southern Goldfields to east of Esperance.

Striated Pardalote *Pardalotus striatus*

93 records from 42 sites: 05B, 14A, 16A, 25B, 26B, 59A, CK00, CK02, CO01A, CO02, FRNP, GA02, GA04,

GA05, NR10, NR11A, OT02A, OT09, OT10, OT10B, OT13B, OT13C, OT13D, PN01A, PN09, PNI1, PNI1A, PNI1B, PNI1C, PNI1D, PNI5, PNI6C, RA07, RV06, RV06B, RV07, SC01, SC06, RNOE6, RNOE7, RNOBC, RNOE1. In ones and occasionally twos in woodland, mallee heath and riparian woodland with a few records from wetland complex, granite complex and coastal dunes habitats. Seen building a nest in November. Wider distribution is much of WA excluding Nullarbor Plain.

MELIPHAGIDAE

Western Spinebill

Acanthorhynchus superciliosus

43 records from 27 sites: 45A, 62B, CK00, CO01B, CO01C, CO03B, GA01, NR11C, OT03, OT10B, OT10D, OT12B, OT13A, OT13H, OT16A, PN02, PN03, PN04, PNI6B, RA09D, SC03, SC07, RNOCMS8, RNO1, RNO2, RNO5, RNO6. Recorded mostly in ones and occasionally in twos in riparian woodland, mallee heath, coastal dunes, woodland, and heath habitats. Also FRNP. Wider distribution is south-west WA from Jurien Bay to Cape Arid.

Singing Honeyeater *Lichenostomus virescens*

Six records from five sites: FRNP, GA04, GA05, PN09, RV06. Four sites were in the eastern and one in the western inland FBR. Usually seen singly from mallee heath, woodland, wetland complex and coastal dune habitats. Wider distribution is entire WA.

White-eared Honeyeater

Lichenostomus leucotis

126 records from 51 sites: CK00, CO01A, CO01B, CO01C, CO03, CO03A, CO03C, ETD, FRNP, GA02, GA03, GA04, GA05, NR02, NR04, NR05, NR10, NR10, NR10B, OT02A, OT08C, OT09, OT10, OT10A, OT10B, OT10C, OT10D, OT11B, OT12B, OT13A, OT13B, OT13C, OT13D, OT13H, OT15, PN01, PN01A, PN05A, PN09, PN11, PN11B, PN11C, PN11D, PN11E, PN16C, RV06, SC01, RNOCMS8, RNOE10, RNO6, RNOBC. Recorded in ones and twos in mallee heath, woodland and riparian woodland and a few records from heath, wetland complex, granite complex and shrubland habitats. Wider distribution is Wheatbelt and southern Goldfields.

Purple-gaped Honeyeater

Lichenostomus cratitius

160 records from 51 sites: 14A, 16A, 25B, 26B, CK01, CK02, CO01B, CO01C, CO03, CO03A, FRNP, GA02, GA03, NR01A, NR06, NR10, NR10, OT02A, OT08C, OT10C, OT13A, OT13B, OT13C, OT13D, OT15, OT16B, PN01, PN02, PN09, PN11, PN11D, PN11F, PN16C, RA13, RV04, RV06A, RV06B, RV09, SC01, RNOCMS1, RNOCMS4, RNOCMS5, RNOE6, RNO3, RNO4, RNO6, RNO7, RNOE1, RNOE2, RNOE3, RNOE4. Across the FBR except along the western coastal region. Mostly singly and sometimes in groups of up to six, predominantly from mallee heath and woodland with a few records from riparian woodland and wetland complex and single

records from heath, granite complex and shrubland habitats. Wider distribution is south-east Wheatbelt and southern Goldfields.

Yellow-plumed Honeyeater

Lichenostomus ornatus

24 records from 11 sites: 04B, 05B, CO01B, GA02, OT15, PN01, PN01A, PN09, PN11, PN15, RV07. These were predominantly in the eastern FBR with a few records from the western and northern FBR including FRNP. Mostly seen singly and occasionally in groups of up to six in mallee heath, woodland, riparian woodland with one record from granite complex habitat. Wider distribution is south-western WA with only limited coastal contact including vicinity of FBR.

Yellow-throated Miner *Manorina flavigula*

111 records from 30 sites: CO01B, CO03D, FRNP, GA04, NR06, NR08, NR10, NR10C, NR11, NR11A, OT02A, OT04, OT05, OT06, OT07, OT09, OT10, OT13C, OT13C, OT16B, PN02, PN05A, PN09, PN11, RV06, RV07, RV08, SC03, RNOCA, RNOBC.

Observed singly and in groups of up to 12 in mallee heath, woodland, riparian woodland, wetland complex and a few records in shrubland and coastal dunes habitats. Observed more commonly on the boundaries of bushland and farmland and in degraded vegetation. Also FRNP. Wider distribution is much of WA excluding Nullarbor Plain and inner south-west.



ABOVE: Salmon gum woodland near Ravensthorpe. BELOW: Spongolite cliffs near Corackerup. Photos: Angela Sanders.





ABOVE: Freshwater pool in granite outcrop, Jerramungup. BELOW: Peniup Creek, Peniup Nature Reserve. Photos: Angela Sanders.



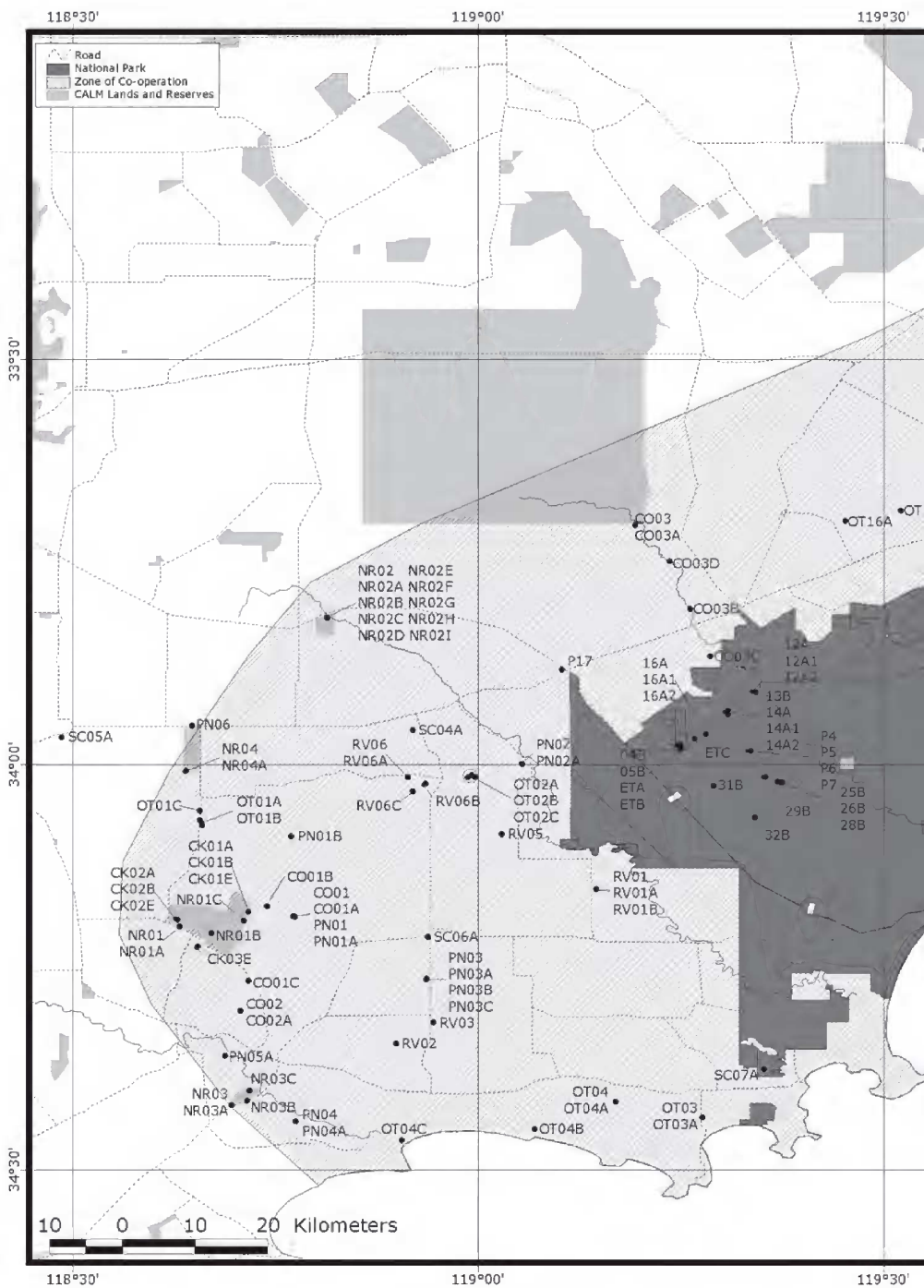
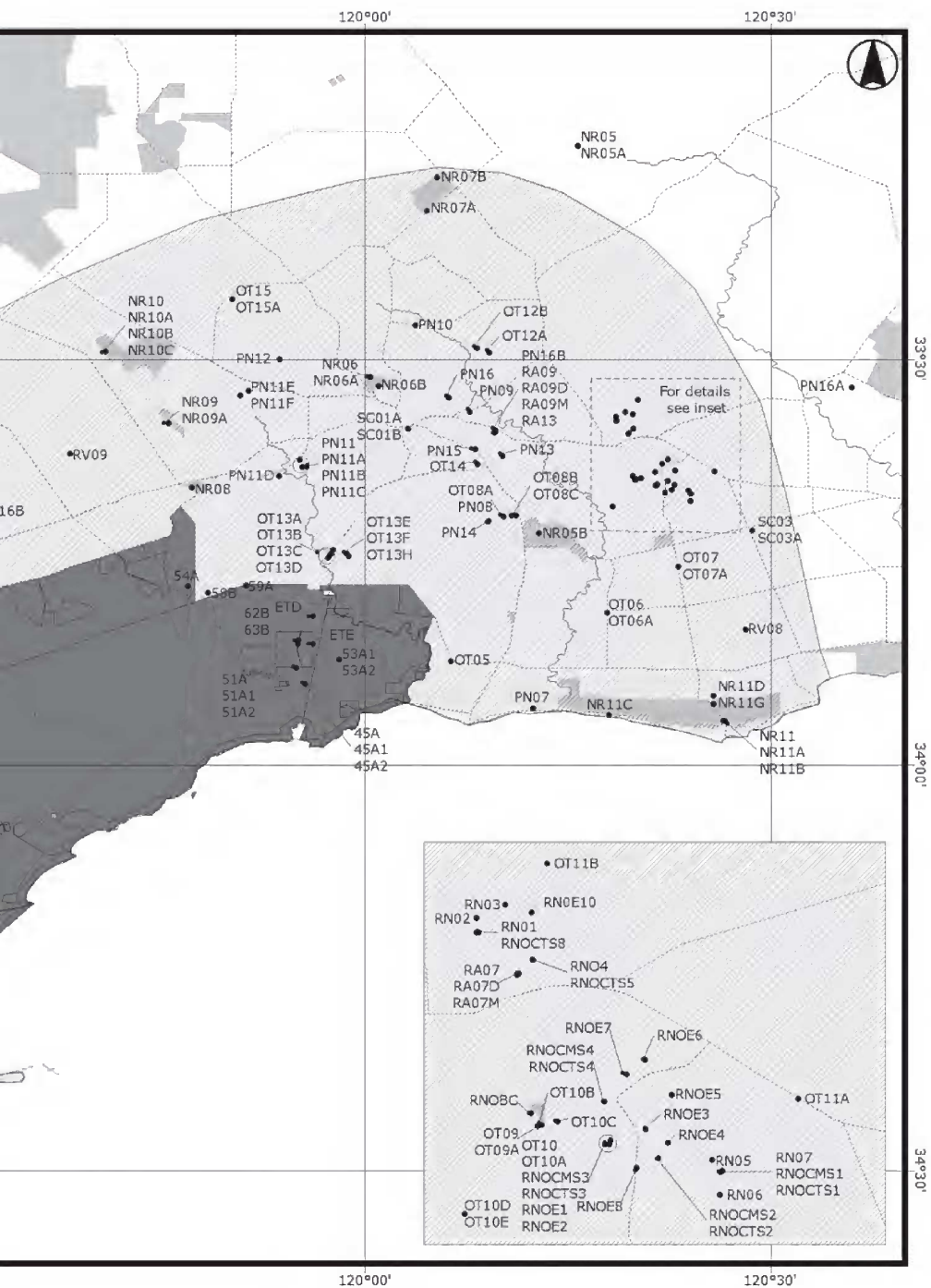


Figure 2. Location of sampling sites in the Fitzgerald Biosphere Reserve.





ABOVE: Fitzgerald River National Park looking west from East Mt Barren. Photo: Angela Sanders.



ABOVE: Heath Rat, *Pseudomys shortridgei*. RIGHT: Common Scalyfoot, *Pygopus lepidopodus*. Photos: Greg Harold.





ABOVE: Black-backed Snake, *Parasuta nigriceps*. RIGHT: *Delma fraseri*. BELOW: Barking Gecko, *Underwoodisaurus milii*. Photos: Greg Harold.



Spiny-cheeked Honeyeater

Acanthagenys rufogularis

25 records from 11 sites: CO03A, FRNP, GA03, GA05, OT13B, OT13C, OT13D, OT13F, OT13H, PN11, PN11A, in the northern FBR. Seen singly and in groups of up to four in mallee heath, woodland, wetland complex and heath habitats. Wider distribution is much of WA excluding Kimberley, Nullarbor Plain and inner south-west.

Western Little Wattlebird

Anthochaera lunulata

186 records from 49 sites: 26B, 28B, 31B, 45A, 53A, CO02A, ETD, FRNP, GA05, GA06, NR11A, NR11B, NR11D, OT07, OT08A, OT08B, OT08C, OT09, OT10A, OT10B, OT10C, OT10D, OT11A, OT13A, OT13B, OT13C, OT13D, OT13H, OT16A, PN01, PN07, PN11F, PN15, PN16C, RA07, RA09M, RV08, RNOCMS5, RNOCMS6, RNOCMS7, RNOCMS8, RNOE10, RNO1, RNO3, RNO5, RNO7, RNOBC, RNOCA, RNOE2. Seen singly and in groups of up to six predominantly in mallee heath and coastal dunes with a few records from riparian woodland, wetland complex, woodland, and heath habitats. Wider distribution is inner south-west of WA, also vicinity of Eyre.

Red Wattlebird *Anthochaera carunculata*

514 records from 112 sites: 04B, 05B, 16A, 25B, 28B, 31B, 32B, 45A, 58B, CK00, CK01, CK03E, CO01A, CO01B, CO01C, CO02, CO02A, CO03, CO03B, CO03C, CO03D, ETA, ETD, FRNP, GA01, GA02,

GA03, GA04, GA05, NR01A, NR02, NR04, NR05, NR06, NR07, NR09, NR10, NR10, NR10C, NR11, NR11A, NR11D, OT02A, OT02B, OT03, OT05, OT06, OT07, OT08A, OT08B, OT08C, OT09, OT10, OT10A, OT10C, OT10D, OT11B, OT12B, OT13A, OT13B, OT13C, OT13D, OT13H, OT15, OT16A, OT16B, PN01, PN01A, PN02, PN03, PN04, PN05A, PN06, PN09, PN11, PN11B, PN11C, PN11D, PN14, PN15, PN16A, PN16C, RV01, RV02, RV03, RV04, RV06, RV06A, RV06B, RV07, RV08, RV09, SC01, SC02, SC07, RNOCMS1, RNOCMS2, RNOCMS3, RNOCMS5, RNOCMS7, RNOCMS8, RNOE10, RNOE6, RNOE8, RNOE9, RNO2, RNO7, RNOBC, RNOCA, RNOCMS3, RNOE3. Mostly in ones and twos; predominantly from mallee heath, woodland, riparian woodland and heath, with a few records from wetland complex, shrubland, coastal dunes and granite complex habitats. Dependent young recorded in May. Wider distribution is south-western WA to edge of Great Victoria Desert and Nullarbor Plain.

White-fronted Chat *Epthianura albifrons*

37 records from 15 sites: 26B, CO01C, CO03, CO03A, GA04, NR10C, NR11D, OT10, OT10D, OT13D, OT16A, PN01, PN01A, RV04, RV06B. In ones and twos in woodland, riparian woodland, mallee heath, heath, wetland complex, shrubland and coastal dune habitats. Mainly recorded in open areas within each habitat

or on the edges of lakes and estuaries. Also FRNP. Wider distribution is south-western WA with south coastal extension east to state border and west coast extension north to North West Cape.

Black Honeyeater *Sugomel niger*

Two records from two sites in FRNP.

Tawny-crowned Honeyeater
Glyciphila melanops

570 records from 91 sites: 12A, 14A, 28B, 29B, 31B, 32B, 51A, 53A, 58B, 62B, 63B, CK00, CK01, CK02, CO01A, CO01B, CO01C, CO02A, CO03, CO03A, CO03C, ETD, FRNP, GA01, GA03, GA04, GA05, NR01, NR01A, NR01B, NR03, NR05, NR09, NR10, NR10, NR10B, NR11A, OT02C, OT06, OT07, OT08A, OT10, OT10B, OT10C, OT10D, OT11B, OT12A, OT12B, OT13A, OT13B, OT13C, OT13D, OT16B, PN01, PN01A, PN02, PN03, PN04, PN09, PN11, PN11E, PN12, RA09M, RV01, RV06, RV06A, RV06B, RV07, RV09, SC03, RNOCMS2, RNOCMS3, RNOCMS4, RNOCMS5, RNOCMS6, RNOCMS8, RNOE10, RNOE11, RNOE6, RNOE7, RNOE8, RNOE9, RNO2, RNO3, RNO6, RNOCMS1, RNOE1, RNOE2, RNOE3, RNOE4, RNOE5. Singly and in groups of up to 10. Most records from mallee heath, then woodland and riparian woodland and a few records from heath, wetland complex, granite complex, shrubland and coastal dune habitats. A nest with two eggs in September, dependent young and birds at nests in October and juvenile

birds in December. Wider distribution is south-west WA.

Brown Honeyeater *Lichmera indistincta*

449 records from 89 sites: 29B, 31B, 45A, 51A, 53A, 63B, CK00, CO01A, CO01B, CO02, CO02A, CO03, CO03B, CO03C, ETD, FRNP, GA01, GA02, GA03, GA04, GA05, NR02, NR03, NR05, NR06, NR10, NR11, NR11A, NR11B, NR11D, OT02B, OT02C, OT05, OT07, OT08C, OT09, OT10, OT10A, OT10B, OT10C, OT10D, OT11B, OT13A, OT13B, OT13C, OT13D, OT13H, OT15, OT16A, PN01, PN01A, PN03, PN04, PN09, PN11, PN11B, PN11E, PN14, PN16C, RV02, RV06, RV06B, RV07, RV09, SC06, RNOCMS2, RNOCMS3, RNOCMS4, RNOCMS5, RNOCMS6, RNOCMS7, RNOCMS8, RNOE1, RNOE10, RNOE11, RNOE5, RNOE6, RNOE7, RNOE8, RNOE9, RNO1, RNO2, RNO3, RNO6, RNO7, RNOBC, RNOE1, RNOE2, RNOE3. Mainly singly and less commonly in groups of up to six. Observed mostly in mallee heath, riparian woodland and woodland with a few records from wetland complex, granite complex, shrubland, coastal dunes and heath habitats. Wider distribution is much of WA excluding Gibson and Great Victoria Deserts, Nullarbor Plain and small area east of Shark Bay.

New Holland Honeyeater
Phylidonyris novaehollandiae

773 records from 99 sites: 28B, 29B, 31B, 45A, 58B, 59A, CK00, CK01, CK03E, CO01B, CO01C, CO02A, CO03, CO03B, CO03C, ETD, FRNP, GA01, GA04, GA05, NR01, NR01A,

NR02, NR03, NR05, NR06, NR07, NR09, NR10, NR10, NR10C, NR11, NR11A, NR11C, NR11D, OT02C, OT04, OT07, OT08A, OT08B, OT08C, OT09, OT10, OT10A, OT10C, OT10D, OT11A, OT11B, OT12A, OT12B, OT13A, OT13B, OT13C, OT13D, OT13H, OT15, OT16A, OT16B, PN01A, PN02, PN03, PN04, PN07, PN09, PN11, PN11E, PN11F, PN12, PN15, PN16A, PN16C, RA07, RA08, RA09D, RA09M, RA13, RV01, RV05, RV06, RV06A, RV06B, RV08, RV09, SC07, RNOCMS7, RNOE5, RNOE6, RNO1, RNO3, RNO4, RNO5, RNO6, RNO7, RNOBC, RNOCA, RNOE1, RNOE3, RNOE4, RNOE5. Seen singly and in groups of up to 10. Most commonly recorded in mallee heath, woodland and riparian woodland, with a few records from heath, wetland complex, granite complex, shrubland and coastal dune habitats. Recorded with dependent young in October. Wider distribution is south-western WA from Dongara to Eyre.

White-cheeked Honeyeater
Phylidonyris nigra

46 records from 17 sites: 12A, 62B, CK02, CO03, CO03A, FRNP, NR01, OT13B, PN01B, PN09, RNOCMS4, RNOCMS7, RNOE9, RNO2, RNO3, RNO6, RNOE2, mainly in the northern and eastern FBR. Singly and in groups of up to 10, mostly from mallee heath with single records from heath, riparian woodland and woodland habitats. Wider distribution is intermittent on west coast from Kalbarri to Cape Leeuwin, southern Wheatbelt

and south coast between Albany and Cape Arid.

Brown-headed Honeyeater
Melithreptus brevirostris

59 records from 17 sites: CK01, FRNP, GA02, GA05, NR10, OT10, OT10A, OT10C, OT10D, OT13H, PN01A, PN09, PN11D, RNOE6, RNO7, RNOBC, RNOCA, across the study area except the western coast. Recorded singly and sometimes in groups of up to six, mainly in mallee heath, woodland with single records from granite complex and wetland complex habitats. An adult observed feeding a young bird at Bandalup Hill in December. Wider distribution is south-western WA extending into Goldfields.

Western White-naped Honeyeater
Melithreptus chloropsis

47 records from 25 sites: 05B, 45A, CK00, CO01A, CO01C, FRNP, NR02, OT02A, OT08B, OT10, OT13A, OT13F, OT13H, PN01A, PN04, PN09, PN11, PN14, PN15, PN16C, RV06B, SC07, RNOE6, RNOBC, RNOE1. In ones and twos in mallee heath, woodland and riparian woodland with single records from wetland complex and shrubland habitats. Seen with dependent young in November. Wider distribution is south-west WA from Moora to Esperance.

POMATOSTOMIDAE

White-browed Babbler
Pomatostomus superciliosus

112 records from 44 sites: 04B,

14A, CK01, CO01C, CO03, CO03A, FRNP, GA02, GA04, GA05, NR01, NR01B, NR01C, NR02, NR05, NR06, NR10, OT10C, OT10D, OT12B, OT13A, OT13B, OT13C, OT13D, OT15, PN01, PN01A, PN09, PN11, PN11A, PN11E, PN14, PN15, PN16C, RV04, RV06A, RV06B, RV07, RNOE1, RNO5, RNOCA, RNOCMS3, RNOE1, RNOE5. In the northern and eastern FBR. Mostly in groups of 2–6 and occasionally singly. Mainly from mallee heath, woodland and riparian woodland with a few records from heath, wetland complex, granite complex, shrubland and coastal dune habitats. Wider distribution is WA south of Tropic of Capricorn excluding Swan Coastal Plain and coastal plain in vicinity of Esperance.

EUPETIDAE

Western Whipbird (western mallee subspecies) *Psophodes nigrogularis oregon*

165 records from 76 sites: 12A, 14A, 26B, 28B, 29B, 31B, CK00, CK01, CK02, CK03E, CO01B, CO01C, CO03, CO03A, CO03B, CO03C, FRNP, GA01, GA04, GA05, NR01, NR01A, NR03, NR05, NR11A, OT02C, OT08A, OT10, OT10A, OT10C, OT10D, OT12A, OT12B, OT13A, OT13B, OT13C, OT13D, OT13E, OT13H, OT16A, OT16B, PN01, PN01B, PN11, PN11E, PN11F, PN15, PN16A, PN16B, PN16C, RA07, RA08, RA09D, RA09M, RA13, RV01, RV04, RV06, RV06A, RV06B, RV09, SC07, RNOCMS5, RNOCMS2, RNOCMS3, RNOE6, RNOE9, RNO4, RNO5, RNO6, RNO7, RNOCA, RNOE1, RNOE2, RNOE4, RNOE5. Recorded main-

ly by call, as this species is very shy, therefore mostly in ones with a few duet calls. Most records from mallee heath, woodland and riparian woodland with a few records from coastal dunes, granite complex and shrubland habitats. During these surveys Western Whipbird was found to be common and widespread. The majority of records (87%) from open mallee vegetation (10–30% canopy cover) of various species over a dense heath understorey (0.5 to 1.5 tall) over a sedge groundcover. A further 11% were from heath and 2% were from shrubland. At all sites the vegetation had been unburnt for between five to 70+ years. As well as being recorded from large areas of bushland, birds were recorded in patches of isolated remnant vegetation, the smallest being 100 ha, and also in 50 m wide road verges. All birds were recorded from vegetation in healthy condition with no obvious weeds present (Sanders 1996). An adult feeding young was observed in October 2000 and a nest with two eggs was found in September 1993, both at Bandalup Hill. Wider distribution is south coast from Two Peoples' Bay to Bandalup Hill and inland to Gnowangerup and Pingrup. A taxonomic review of this bird recognises two subspecies on the south coast of Western Australia, the western heath subspecies *Psophodes n. nigrogularis* and the western mallee subspecies *Psophodes nigrogularis oregon* (Schodde and Mason 1991).

NEOSITTIDAE

Varied Sittella *Daphoenositta chrysoptera*

55 records from 13 sites: GA02, NR10, OT10, OT13H, PN01A, PN02, PN09, PN11, PN11A, PN11B, PN11C, RV04, RNOBC. Mostly in small groups of two to six birds, one group of 20 and occasionally singly. Recorded mostly from woodland, two records from mallee heath and single records from riparian woodland and wetland complex habitats. Also FRNP. Wider distribution is much of WA south of the Great Sandy Desert excluding the Nullarbor Plain and a coastal strip in the vicinity of Esperance and the coast and hinterland north of Geraldton.

CAMPEPHAGIDAE

Ground Cuckoo-shrike *Coracina maxima*

One record from FRNP.

Black-faced Cuckoo-shrike
Coracina novaehollandiae

98 records from 53 sites: 04B, 14A, 45A, 58B, CK01, CO03, CO03A, CO03D, FRNP, GA03, GA04, NR02, NR10B, NR11, NR11A, NR11C, NR11D, OT04, OT08C, OT10A, OT12A, OT13A, OT13B, OT13C, OT13D, OT13H, PN01, PN05A, PN09, PN11, PN11A, PN11C, RA07, RA09M, RV06, RV06A, RV06B, RV07, SC01, SC06, RNOCMS2, RNOCMS7, RNOCMS8, RNOE1, RNOE6, RNO1, RNO3, RNO7, RNOBC, RNOCA, RNOCMS1, RNOE1, RNOE3. Found in ones and twos in mallee heath and woodland, and a few records in

riparian woodland, heath, wetland complex, shrubland, coastal dunes and granite complex habitats. Wider distribution is much of WA excluding Great Sandy Desert and area between Great Victoria Desert and Nullarbor Plain.

White-winged Triller *Lalage sueurii*
13 records from six sites: FRNP, PN01, PN03, PN11, RV01, RV04. Seen in ones, twos and one group of five in woodland, mallee heath and wetland complex habitats. Wider distribution is much of WA excluding Nullarbor Plain and coastal strip from Albany to Cape Leeuwin.

PACHYCEPHALIDAE

Crested Shrike-tit *Falcunculus frontatus leucogaster*

Two records from FRNP where it is noted as very rarely seen in woodland habitats. Wider distribution is lower south-western WA but very patchy in coastal areas.

Gilberts Whistler *Pachycephala inornata*

One record from FRNP, a pair with three young in January in mallee heath. Wider distribution is south-western WA from eastern edge of Wheatbelt through Goldfields, southern Murchison to Great Victoria Desert.

Golden Whistler *Pachycephala pectoralis*

138 records from 72 sites: 04B, 05B, 14A, 25B, 26B, 28B, 45A, 53A, 59A, CK00, CK01, CK02, CK03E, CO01A,

CO01B, CO01C, CO03, CO03B, CO03C, ETA, ETD, FRNP, GA02, GA03, GA04, GA05, NR01B, NR10, OT02C, OT08A, OT10, OT10A, OT10C, OT12B, OT13A, OT13B, OT13C, OT13H, OT15, OT16B, PN01, PN01A, PN04, PN07, PN09, PN11, PN11A, PN11B, PN11D, PN14, PN15, PN16A, PN16C, RA07, RA08, RA09D, RA13, RV06, RV06A, RV06B, RNOCMS1, RNOE5, RNOE6, RNOE7, RNOE8, RNO4, RNO5, RNO7, RNOBC, RNOCA, RNOE1, RNOE3. Recorded singly and sometimes in pairs in mallee heath, woodland and riparian woodland, with a few records from wetland complex, coastal dunes, granite complex and heath habitats. Wider distribution is south-western WA with south coastal extension to state border.

Rufous Whistler *Pachycephala rufiventris*

32 records from 17 sites: 04B, 05B, CK00, CK03E, CO01A, CO01B, CO01C, CO03C, NR02, OT02A, OT02B, PN01, PN05A, RV04, RV06, RV06B, RV07. Mainly in the western to mid FBR (not recorded east of the Fitzgerald River). Observed singly in riparian woodland, woodland and mallee heath habitats. Wider distribution is much of WA excluding Great Sandy Desert, Nullarbor Plain and inner south-west.

Grey Shrike-thrush *Colluricincla harmonica*

141 records from 63 sites: 04B, 05B, 14A, 16A, 25B, 28B, 31B, 45A, 53A,

CK00, CK01, CK02, CK03E, CO01A, CO01B, CO01C, CO02, CO03, CO03A, ETD, FRNP, GA02, GA04, GA05, NR01A, NR02, NR03, NR06, NR10, NR10, NR10C, NR11A, OT02A, OT10C, OT12A, OT12B, OT13A, OT13B, OT13C, OT13D, OT13H, PN01, PN01A, PN09, PN11, PN11A, PN11C, PN11D, PN16C, RA07, RV04, RV06, RV06A, RV06B, RV07, RV09, SC07, RNOE6, RNOE7, RNO6, RNO7, RNOBC, RNOE3. Recorded across the FBR, except for the western coastal areas. Mostly in ones and occasionally twos, mainly in mallee heath, woodland, riparian woodland and heath with a few records from wetland complex, coastal dunes, granite complex and heath habitats. Nesting in October. Wider distribution is much of WA excluding Great Sandy Desert and Kimberley.

Crested Bellbird *Oreoica gutturalis gutturalis*

112 records from 61 sites: 12A, 14A, 28B, 29B, 53A, 62B, CK01, CK03E, CO01A, CO01B, CO01C, CO03, CO03A, FRNP, GA03, GA04, GA05, NR01, NR01A, NR10B, OT10, OT10C, OT10D, OT11B, OT12A, OT12B, OT13A, OT13B, OT13C, OT13D, OT13H, OT15, PN01, PN01A, PN01B, PN09, PN11, PN11B, PN11D, PN11E, PN15, RV01, RV04, RV06, RV06A, RV06B, RV07, RNOCMS4, RNOCMS5, RNOE11, RNOE6, RNOE7, RNOE8, RNOE9, RNO2, RNO3, RNO4, RNO5, RNOCA, RNOE1, RNOE2. In the northern study area. In ones and occasionally twos in mallee heath, woodland, riparian woodland,

heath and single records from granite complex and shrubland habitats. Wider distribution is much of WA excluding north west Kimberley, Nullarbor Plain, inner south-west and coastal strip in vicinity of Esperance.

ARTAMIDAE

Masked Woodswallow *Artamus personatus*

A flock of 55–60 seen in FRNP, flying overhead and perching (1985). Noted as a rarely seen nomadic bird preferring burnt mallee in the FRNP. Wider distribution is much of WA excluding north-west Kimberley and inner south west.

Black-faced Woodswallow
Artamus cinereus

Ten records from five sites: CO03, CO03A, GA03, OT16B, RV07. In the Jerramungup and Fitzgerald River areas. In ones, twos and threes in mallee heath and heath habitats. Wider distribution is much of WA excluding inner south-west.

Dusky Woodswallow *Artamus cyanopterus*

56 records from 20 sites: 04B, 05B, 59A, CK00, FRNP, NR01A, NR10, OT06, OT10, OT12B, OT13B, OT13C, PN01A, PN09, PN11, RV04, RV06A, RV06B, RV08, RNOBC. In the northern and eastern FBR. Singly and in small groups up to four in riparian woodland, wetland complex, granite complex, mallee heath, woodland and heath habitats. Dependent young in October. Wider distri-

bution is south-western WA with south coastal extension to state border.

Grey Butcherbird *Cracticus torquatus*

130 records from 72 sites: 28B, 31B, 32B, 51A, CK01, CK02, CO01A, CO01B, CO01C, CO03, CO03A, FRNP, GA01, GA03, GA04, GA05, NR01, NR01A, NR02, NR03, NR04, NR05, NR06, NR08, NR10, NR10C, NR11A, NR11B, NR11D, OT01B, OT02A, OT03, OT04, OT06, OT09, OT10, OT10A, OT10C, OT10D, OT11B, OT12B, OT13A, OT13B, OT13C, OT13D, OT13H, PN01, PN01A, PN04, PN09, PN11, PN11D, PN15, PN16B, PN16C, RV01, RV03, RV04, RV05, RV06, RV06B, RV07, RNOCMS2, RNOCMS6, RNOCMS7, RNOCMS8, RNOE8, RNOE9, RNO3, RNOBC, RNOCA, RNOE1. Mostly in ones and occasionally twos, predominantly in mallee heath and woodland, with fewer records in riparian woodland, heath, wetland complex, shrubland, coastal dunes and granite complex habitats. Nest building in October. Wider distribution is WA south of Fortescue River excluding Nullarbor Plain and heavily forested areas of the south-west.

Pied Butcherbird *Cracticus nigrogularis*

Four records from three sites: GA05, GA06, SC01. In east FBR. Solitary birds in woodland and riparian woodland habitats. Wider distribution is much of WA excluding Great Sandy Desert, Nullarbor Plain and inner south-west.

Australian Magpie *Gymnorhina tibicen*

97 records from 38 sites: 12A, 14A, CK00, CO01A, CO01B, CO03, CO03A, FRNP, GA01, GA03, GA04, GA05, NR02, NR10, NR11, NR11A, OT01B, OT02A, OT10C, OT12B, OT13C, OT13D, OT16B, PN01, PN09, PN11, PN11A, PN12, RV04, RV05, RV06, RV06B, RNOCMS2, RNO3, RNOBC, RNOCMS1, RNOE2, RNOE3. Seen singly, in pairs and groups of up to six in mallee heath and woodland and a few records from riparian woodland, heath, wetland complex, shrubland and coastal dune habitats. Also common on farms throughout the FBR. Wider distribution is greater south-western and south-eastern WA with hybrid zone with *C. t. tibicen* north of the study area.

Grey Currawong *Strepera versicolor*

188 records from 78 sites: 04B, 14A, 16A, 25B, 31B, 45A, CK00, CK01, CK03E, CO01B, CO01C, CO02A, CO03, CO03B, CO03D, ETA, FRNP, GA02, GA03, GA04, GA05, NR01, NR01C, NR02, NR03, NR04, NR06, NR07, NR10, NR10, NR10C, NR11A, OT01B, OT02A, OT02B, OT03, OT04, OT07, OT10, OT10A, OT10C, OT10D, OT12B, OT13A, OT13C, OT13D, OT13H, PN01, PN01A, PN03, PN04, PN05A, PN09, PN11, PN11A, PN11D, PN15, PN16C, RA08, RA09D, RA13, RV04, RV06, RV06B, RV07, RV09, SC01, SC06, SC07, RNOCMS4, RNOE6, RNOE8, RNO2, RNO4, RNO5, RNOBC, RNOCA, RNOE1. In ones and twos, occasionally in threes in mallee heath, woodland and riparian woodland and a few

records from heath, wetland complex, shrubland and coastal dune habitats. Wider distribution is southern WA excluding Nullarbor Plain.

RHIPIDURIDAE

Grey Fantail *Rhipidura albiscapa*

82 records from 43 sites: 25B, 45A, CK00, CO01A, CO01B, CO01C, CO02, CO03, CO03B, CO03C, CO03D, FRNP, GA01, GA02, GA04, NR01A, NR02, NR03, NR10, NR11, NR11A, OT02A, OT04, OT08C, OT09, OT10, OT10B, OT12B, OT13A, OT13B, OT15, PN01, PN01A, PN02, PN03, PN07, PN09, PN11, PN11C, RV06, RV06B, SC07, RNOBC. In ones and sometimes twos in riparian woodland, mallee heath and woodland with a few records in wetland complex, granite complex and coastal dune habitats. Wider distribution is western WA from Port Hedland to Cape Arid approximately.

Willie Wagtail *Rhipidura leucophrys*

113 records from 48 sites: 05B, 45A, CO01A, CO01B, CO01C, CO03, CO03A, CO03C, CO03D, FRNP, GA01, GA02, GA03, GA04, NR01, NR02, NR04, NR07, NR10, NR10C, NR11, NR11D, OT02A, OT02B, OT05, OT09, OT10, OT10D, OT11B, OT12B, OT13C, OT15, OT16A, OT16B, PN01A, PN04, PN09, PN11, PN14, RV03, RV04, RV06, RV06B, RV07, RV08, RV09, RNOCMS1, RNOBC. Recorded in ones and twos in mallee heath, woodland, riparian woodland and wetland complex with a few records in coastal dunes, shrubland and heath habitats. Wider distribution is entire WA.

CORVIDAE

Australian Raven *Corvus coronoides*

175 records from 63 sites: 04B, 05B, CK01, CO01B, CO03D, FRNP, GA01, GA02, GA03, GA04, GA05, NR01A, NR02, NR06, NR08, NR10B, NR11, NR11A, NR11D, OT02A, OT04, OT05, OT07, OT08C, OT10, OT12B, OT13A, OT13B, OT13C, OT13D, OT13H, OT16B, PN01, PN03, PN04, PN05A, PN09, PN11, PN11A, PN11B, PN15, PN16C, RA07, RA09D, RV03, RV06, RV06B, RV08, RV09, SC01, SC07, RNOCMS8, RNOE6, RNOE7, RNO3, RNO4, RNO5, RNO6, RNO7, RNOBC, RNOCA, RNOE1, RNOE3. Mostly in ones and twos, one flock of 20. Predominantly in mallee heath, woodland and riparian woodland, with a few records in wetland complex, granite complex, shrubland, heath and coastal dune habitats. Wider distribution is greater south western WA with south coastal extension to state border.

MONARCHIDAE

Restless Flycatcher *Myiagra inquieta*

76 records from 41 sites: 05B, 16A, 25B, 59A, CO01A, CO01B, CO01C, FRNP, GA02, GA04, GA05, NR01, NR02, NR05, NR10, NR11D, OT02A, OT02B, OT09, OT10B, OT10C, OT12B, OT13A, OT13B, OT13C, OT13D, OT13H, OT16A, PN01A, PN02, PN09, PN11, PN11B, PN14, RV03, RV06, RV06B, RV07, RV08, RNOE6, RNOBC. Across the FBR, except the western coastal areas. Singly in woodland, mallee heath and riparian woodland with a few records from granite com-

plex, coastal dunes, shrubland and heath habitats. Wider distribution is southern south-western WA including southern Goldfields.

Magpie-lark *Grallina cyanoleuca*

26 records from 19 sites: CK00, CO01B, CO03, FRNP, GA03, GA04, NR02, NR04, NR10B, NR11, OT02A, OT13F, OT16B, PN01, PN01A, PN11, RV06, RV08, RNOBC. Mostly in paddocks and in wet or open areas within bushland. Singly and in pairs in mallee heath, wetland complex, granite complex, shrubland, heath, coastal dunes and woodland habitats. Wider distribution is much of WA excluding Great Sandy and Great Victoria Deserts.

PETROICIDAE

Jacky Winter *Microeca fascinans*

One record from FRNP. Wider distribution is south-western WA largely excluding coastal areas but with south coast extension to state border.

Scarlet Robin *Petroica boodang*

Six records from six sites: 05B, GA01, OT02A, PN01A, RV06, RNOCMS5. Recorded singly from riparian woodland, woodland and mallee heath habitats. Also FRNP. Wider distribution is south-west WA north to Jurien Bay with south coastal extension to Cape Arid.

Red-capped Robin *Petroica goodenovii*

14 records from six sites: GA04, OT13H, PN11, PN11A, PN11C, RV06B.

Singly and in pairs from wetland complex and woodland habitats. Also FRNP. Wider distribution is much of WA excluding Kimberley and inner south-west.

Hooded Robin *Melanodryas cucullata*

Three records from two sites: CO03A, NR10. Singly and a pair in shrubland and heath habitats. Also FRNP. Wider distribution is much of WA excluding central wheatbelt (due to clearing) and Great Sandy Desert.

Western Yellow Robin *Eopsaltria griseogularis*

17 records from 10 sites: 45A, FRNP, GA03, GA05, NR10, OT13D, OT13H, PNI1, PNI1A, RNOBC, in the northern FBR. In ones and twos from riparian woodland, mallee heath, wetland complex and woodland habitats. Wider distribution is south-western WA with south coast extension to state border.

Southern Scrub-robin *Drymodes brunneopygia*

147 records from 61 sites: 12A, 14A, 16A, 25B, 26B, CK01, CO01B, CO01C, CO03, CO03A, CO03C, ETD, FRNP, GA03, GA04, GA05, NR01B, NR05, NR06, NR09, NR10, NR10, OT01C, OT08A, OT08B, OT08C, OT10, OT10A, OT10C, OT12A, OT12B, OT13A, OT13B, OT13C, OT13D, OT13H, OT15, PN01, PN01A, PN02, PNI1, PNI5, PNI6C, RA09M, RA13, RV01, RV04, RV05, RV06, RV06A, RV06B, RV07, RV09, RNOE5, RNOE6, RNOE7, RNO5, RNOCA, RNOCMS1, RNOE4, RNOE5.

Across the FBR, except the western coastal areas. Mostly in ones and occasionally twos, predominantly in mallee heath and woodland, with a few records from riparian woodland, heath, wetland complex, granite complex and shrubland habitats. Wider distribution is south-western WA excluding Swan Coastal Plain and heavily forested areas.

ACROCEPHALIDAE

Australian Reed-Warbler

Acrocephalus stentoreus

Two records from FRNP, two birds in wetland complex habitat which in this case was a *Baumea articulata* swamp. The source noted that this type of habitat is very scarce in the FBR. Wider distribution is patchy throughout much of WA except central arid zone (determined by availability of scarce suitable habitat).

MEGALURIDEA

Little Grassbird *Megalurus gramineus*

Three records from FRNP. These were from same site as Australian Reed Warbler and the same comments (including wider distribution) apply.

Rufous Songlark *Cincloramphus mathewsi*

Three records from three sites: GA03, OT13H, RV06. Solitary birds in woodland and mallee heath habitats. Wider distribution is much of WA, apparently scarce in southern arid and semi-arid zone.

Brown Songlark *Cincloramphus cruralis*

Two records from two sites: GA05, OT10. Both solitary birds in mallee heath habitat. Wider distribution is much of WA excluding Kimberley.

TIMALIIDAE

Silvereye *Zosterops lateralis*

244 records from 73 sites: 45A, CK00, CO01A, CO01B, CO01C, CO02A, CO03, CO03A, CO03B, CO03C, CO03D, ETD, FRNP, GA01, GA02, GA03, GA04, GA05, GA06, NR01A, NR02, NR03, NR05, NR10, NR11, NR11A, NR11B, NR11C, NR11D, OT02A, OT02C, OT03, OT07, OT08C, OT10A, OT12B, OT13A, OT13B, OT13C, OT13H, OT15, OT16B, PN01, PN01A, PN03, PN04, PN07, PN09, PN11, PN11C, PN11D, PN11E, PN14, RA07, RA09M, RV06, RV06B, RV08, SC02, SC07, RNOCMS2, RNOCMS4, RNOCMS5, RNOE11, RNOE5, RNOE6, RNOE7, RNO1, RNO5, RNO6, RNO7, RNOBC, RNOCMS4. Singly and in groups of up to 10 in mallee heath, woodland, riparian woodland and coastal dunes with a few records in wetland complex, granite complex, shrubland and heath habitats. Seen with dependent young in September and December. Wider distribution is south-western WA with south coastal extension to state border and west coast extension to Tropic of Capricorn.

HIRUNDINIDAE

White-backed Swallow
Cheramoeca leucosternus

Two records from FRNP where it

is noted as a rarely seen visitor. Wider distribution is much of WA excluding Kimberley, Nullarbor Plain and inner south-west.

Welcome Swallow *Hirundo neoxena*

47 records from 12 sites: 04B, CO03B, FRNP, GA01, NR06, NR11, NR11A, NR11D, OT09, PN09, PN11, RNO4. Singly and in groups of up to ten from mallee heath, riparian woodland, wetland complex, coastal dunes and, woodland habitats. Seen nest building in September. Wider distribution is much of WA excluding central arid zone.

Fairy Martin *Hirundo ariel*

13 records from two sites: GA05, OT08C. Twelve birds nest building under the bridge at the Jerdacuttup River crossing with North Jerdacuttup Rd in November 1994. Wider distribution is much of WA excluding only the inner south-west.

Tree Martin *Petrochelidon nigricans*

357 records from 26 sites: 05B, CO01B, CO03D, FRNP, GA04, NR01A, NR02, NR11A, OT02A, OT02C, OT04, OT08C, PN03, PN04, PN05A, PN11, PN11C, RV01, RV04, RV06, RV06B, RV07, RV08, SC03, RNOCMS7, RNOBC. Singly and in groups of up to 20, with one group of 200 seen in Corackerup Nature in December 1993. From mallee heath, riparian woodland, wetland complex, granite complex, coastal dunes, shrubland and heath habitats. Wider distri-

bution is much of WA excluding central arid zone.

ESTRILDIDAE

Red-eared Firetail *Stagonopleura oculata*

38 records from 17 sites: 45A, CK00, CO01C, CO03, FRNP, GA05, GA06, OT12B, OT13A, OT13B, PN01A, PN11, PN15, RV06, RV06A, RV06B, SC07. Mostly in ones and twos in riparian woodland, woodland and mallee heath habitats, usually in dense vegetation. Nest building in October. Wider distribution is south-west WA including Darling Range, Leeuwin-Naturaliste ridge and east to Ravensthorpe. Also Recherche Archipelago and mainland east of Esperance.

MOTACILLIDAE

Australian Pipit *Anthus australis*

16 records from eight sites: CO03, GA03, NRI0, PN01A, PN11, RV06A, RV06B, RNOE7. In mallee heath, wetland complex and woodland habitats and more commonly in farmland across the study area. Also FRNP. Wider distribution is entire WA except small patch in Great Sandy Desert.

Avifauna discussion

The ten most commonly recorded species in descending order were New Holland Honeyeater (n=773), Tawny-crowned Honeyeater (n=570), Red Wattlebird (n=514), Eurasian Coot (n=456), Brown Honeyeater (n=449), Tree Martin (n=357), Weebill (n=343), Malleefowl

(n=295), Purple-crowned Lorikeet (n=278), Australian Shelduck (n=248). In the case of the Malleefowl and Western Whipbird (which had 295 and 165 records respectively) the number is biased due to the selective and intense nature of the observational effort. Had similar effort been applied to some of the more common species a more realistic perspective of these species status would have been derived i.e. these data do not indicate their true rarity. What the data do demonstrate, however, is that the vicinity of Ravensthorpe is a centre of concentration for these two species in particular.

The majority of species that occur in the FBR were widely distributed. Some were seabirds that range widely over the oceans or are trans-equatorial waders which have distributions extending into the northern hemisphere. Of the land birds, many were water adapted species which can be found over much of continental Australia depending on rainfall, or are nomadic such as the honeyeaters which follow favourable feeding conditions. Many others were migrants which only periodically occur in the FBR or were simply widely ranging species with distributions far into the arid interior. Of the 206 species known to occur in the FBR only 10 (5%) are endemic to the Southwest Botanical Province. They are Carnaby's Cockatoo (*Calyptorhynchus latirostris*),

Western Rosella (*Platycercus icterotis*), Red-capped Parrot (*Platycercus spurius*), Western Bristlebird (*Dasyornis longirostris*), Western Thornbill (*Acanthiza inornata*), Western White-naped Honeyeater (*Melithreptus chloropsis*), Western Little Wattlebird (*Anthochaera lunulata*), Western Whipbird (*Psophodes nigrogularis oberon*), Crested Shrike-tit (*Falcunculus frontatus leucogaster*) and Red-eared Firetail (*Stagonopleura oculata*).

Excluding the obvious limitations imposed on land birds caused by the presence of the Southern Ocean, a further 13 species reach the boundaries of their distributions either within or immediately adjacent to the FBR. They are Red-capped Parrot (*Platycercus spurius*), Western Rosella (*Platycercus icterotis icterotis*), Barking Owl (*Ninox connivens connivens* south-west population), Laughing Kookaburra (*Dacelo novaeguineae*), Western Bristlebird (*Dasyornis longirostris*), Western Thornbill (*Acanthiza inornata*), White-eared Honeyeater (*Lichenostomus leucotis novaenorciae*), Spiny-cheeked Honeyeater (*Acanthagenys rufogularis*), Western Whipbird (*Psophodes nigrogularis oberon*), Crested Bellbird (*Oreoica gutturalis*), Black-faced Woodswallow (*Artamus cinereus melanops*) and Red-eared Firetail (*Stagonopleura oculata*).

Mammals

The mammal fauna of the study area is represented by 42 taxa

from 17 families, including 29 extant native taxa, seven presumed extinct and seven introduced taxa (Appendix II). This summary is drawn from 2967 records from the FBR Study 1993–97 and the Bandalup Hill Study 1998–2005 and includes 482 records derived from the WAM from the previously described search area. In addition, at the time of the FBR study A. Baynes (WA Museum) provided data on sub-fossil remains collected from four areas within the FRNP.

TACHYGLOSSIDAE

Echidna *Tachyglossus aculeatus*

49 records from 38 sites: CK00, CK02, CO01B, CO03, CO03B, GA04, GA06, NR01A, NR01C, NR06, OT01B, OT02A, OT02C, OT08A, OT10, OT10A, OT10C, OT12B, PN01, PNI1, PNI1B, PNI1C, PNI6C, RA08, RNO7, RNOCMS1, RNOCMS3, RNOCMS4, RNOE1, RNOE2, RNOE3, RNOE5, RNOE6, RNOE7, RV06A, RV06B, RV07, RV09. From the northern and eastern FBR in all habitats. Recorded predominantly from diggings. Wider distribution is entire WA.

DASYURIDAE

Chuditch *Dasyurus geoffroii*

A single male killed on the road in May 1994 10km east of Ravensthorpe on Highway One (site GA05) in mallee heath habitat, supplemented by a single specimen collected in 1992 sourced from the WAM collection. Since these data were

compiled there have been numerous records from east and north of the Ravensthorpe Range and in FRNP. Wider present distribution is southern south-west WA.

Southern Dibbler *Parantechinus apicalis*

14 records from six sites: 12A, 31B, 32B, 51A, ETB, ETC. Six from mallee heath, one from heath and seven from granite complex habitats. Supplemented by nine records from nine sites sourced from the WAM collection. Currently only known from FRNP on the WA mainland with west coast island populations on Boullanger and Whitlock Islands.

Mardo *Antechinus flavipes leucogaster*

One specimen record (M 15365) from Doubtful Islands in 1977. Sub-fossil remains found at two sites, including an owl accumulation at Joonacoonack Bluff in the FRNP in 1984 (A. Baynes *pers. comm.*) Wider distribution is south-west WA excluding semi-arid parts.

Red-tailed Phascogale *Phascogale calura*

A single female with pouch development captured twice from one site, 16A, in FRNP comprising *Eucalyptus platypus* woodland. Supplemented by six records from five sites sourced from the WAM collection. Wider distribution is south-east of south-west WA.

Fat-tailed Dunnart *Sminthopsis crassicaudata crassicaudata*

14 records from 11 sites: 04B, 14A, 25B, 26B, 51A, 53A, CK01, CK02, OT10D, P17, RV06B.

Predominantly in mallee heath, with single records from riparian woodland and woodland habitats. A lactating female captured in October and one with pouch young in November. Supplemented by seven records from six sites sourced from the WAM collection. Wider distribution is southern WA excluding inner south-west.

Gilberts Dunnart *Sminthopsis gilberti*

One record from FBR, a male (M 60777) drowned in a bucket at homestead in mixed *Eucalyptus occidentalis*/*Acacia acuminata* woodland 19 km south south west of Ravensthorpe in 2008. Wider distribution has two apparently separate occurrences; southern south-western WA and south east WA in vicinity of state border.

White-tailed Dunnart *Sminthopsis granulipes*

Four records from two sites: RNOCMS3, RNOCMS4. In mallee heath habitat. Also FRNP. Supplemented by five records from five sites (including two records from Dunn Rock Nature to the north of the FBR) sourced from the WAM collection. Wider distribution is northern and southern sandplains and duricrust surfaces in south-west WA.

Grey-bellied Dunnart *Sminthopsis griseoventer*

55 records from 23 sites: 05B, 14A, 16A, 51A, 53A, 62B, CK02, CO01B, CO03A, NR09, NR11A, NR11B, OT13C, OT13D, RNO4, RNOCS2, RNOCS4, RNOCS5, RNOCS7, RNOE4, RNOE5, SC03, SC04. Mainly in mallee heath, with a few records from riparian woodland, woodland, heath, shrubland and coastal dunes habitats. Also FRNP. Females with pouch young captured during September and November, supplemented by 25 records from 17 sites sourced from the WAM collection. Wider distribution is coastal environments and hinterlands from Geraldton to Cocklebiddy in WA.

PERAMELIDAE

Southern Brown Bandicoot,
Quenda *Isoodon obesulus fusciventer*

11 records from seven sites: GA02, GA04, GA05, OT09, OT12B, RNO6, RNOE. In mallee heath and riparian woodland habitats, supplemented by eight records from six sites sourced from the WAM collection. Also FRNP. Recorded predominantly from diggings. Wider distribution is Swan Coastal Plain and inland margins, south coast and inland margins east to Cape Arid.

BURRAMYIDAE

Western Pygmy-possum
Cercartetus concinnus

99 records from 29 sites: 16A, 26B, 29B, 45A, 51A, CO01A, CO01B, CO01C, CO03A, GA04, OT10A,

OT10B, OT10C, OT10D, PNI1C, PNI1D, RA07, RNO3, RNO7, RNOCS1, RNOCS2, RNOCS3, RNOCS4, RNOCS7, RNOCS8, RNOE5, RV06A, RV06B, SC01. Mainly from mallee heath and woodland with a few records from heath and riparian woodland habitats. Recorded with pouch young in November and December. Supplemented by 14 records from 10 sites in the WAM collection. Also FRNP. Wider distribution is southern WA including arid zone woodlands and periphery of Nullarbor Plain and Great Victoria Desert.

TARSIPEDIDAE

Honey Possum *Tarsipes rostratus*

548 records from 52 sites: 12A, 14A, 31B, 45A, 51A, 53A, 62B, 63B, CK02, CO01B, CO01C, CO03, CO03A, FRNP, NR03, NR10B, NR11A, NR11B, OT10A, OT10B, OT10C, OT10D, OT13B, OT13E, P17, P4, P5, P7, PNI1B, RA07, RNO1, RNO2, RNO3, RNO4, RNO5, RNO6, RNO7, RNOCS1, RNOCS2, RNOCS3, RNOCS4, RNOCS5, RNOCS6, RNOCS7, RNOCS8, RNOE5, RV06A, RV06B, SC02, SC03, SC06, SC07. Mainly in mallee heath, with some records from riparian woodland, heath, coastal dunes and woodland habitats. Females with pouch young captured in January, April, June, September, October, November, and December. Supplemented by 76 records from 32 sites in the WAM collection. Also FRNP. Wider distribution is south-west WA.

PHALANGERIDAE

Common Brushtail Possum

Trichosurus vulpecula vulpecula

21 records from 13 sites: 05B, 16A, CO01A, CO03B, ETA, GA04, GA05, PN01, PNI1A, PNI1B, PNI1C, PNI15. Predominantly from woodland with a few records from riparian woodland and mallee heath habitats. Also FRNP. Supplemented by five records from three sites sourced from the WAM collection. Females with pouch young captured in September. Wider distribution is south-west WA

POTOROIDAE

Brush-tailed Bettong, Woylie

Bettongia penicillata ogilbyi

There are unconfirmed sightings on Quiss Road in the FRNP and surrounds during the 1990s. There is specimen (M 7641) from 1967 at 33°57'S, 119°11'E (c. 10 km south of Jacup) in WAM collection. Sub-fossil remains found in an owl accumulation at Joonacoonack Bluff in the FRNP in 1984 (A. Baynes *pers. comm.*). Wider distribution is three separate localities in south-west WA.

MACROPODIDAE

Tammar *Macropus eugenii*

Two records from two sites: GA05, OT08C. In mallee heath habitat. Also FRNP. Supplemented by five records from five sites (WAM). Wider mainland distribution is inner south-west of WA with island populations on Houtmans Abrolhos, Garden

and Recherche Archipelago Islands.

Western Grey Kangaroo *Macropus fuliginosus ocydromus*

244 records from 87 sites: 05B, 12A, 45A, 51A, 54A, CK01, CK02, CK03E, CO01A, CO01B, CO01C, CO02, CO02A, CO03, CO03A, CO03B, CO03C, ETA, FRNP, GA02, GA03, GA04, GA05, NR01A, NR02, NR03, NR04, NR05, NR06, NR07, NR08, NR09, NR10, NR10C, NR11, OT01A, OT01B, OT01C, OT02A, OT02C, OT07, OT08C, OT09, OT10, OT10A, OT10B, OT10C, OT10D, OT11A, OT11B, OT12A, OT12B, OT13A, OT13B, OT13C, OT13D, OT15, OT16A, OT16B, PN01, PN01A, PN03, PN04, PN05A, PN09, PNI1, PNI1A, PNI1B, PNI1C, PNI1D, PNI1E, PNI12, PNI16C, RNO2, RNO7, RNOBC, RNOCMS1, RNOCMS4, RNOE3, RNOE6, RNOE8, RV04, RV06A, RV06B, RV07, RV09, SC03. The sixth most commonly recorded mammal, present in all habitats including remnant vegetation and paddocks. Also FRNP. Supplemented by eight records from seven sites sourced from the WAM collection. A few adults with suspected choroid blindness were observed near Ravensthorpe in winter 1996. Wider distribution is southern WA including arid zone.

Western Brush Wallaby *Macropus irma*

31 records from 14 sites: CK00, CO01C, FRNP, GA02, GA03, GA04, GA05, GA06, OT06, OT11B, OT13A, OT13E, RNO2, RNOE9. Seen mainly when traveling along

roads and as road kills in mallee heath habitat. Supplemented by nine records from nine sites sourced from the WAM collection. Wider distribution is south-west WA.

MOLOSSIDAE

White-striped Freetail-bat
Tadarida australis

Five records from five sites: CO01B, OT10C, RV06, RV06B, RNOBC, in mallee heath and woodland habitats. Recorded from their distinctive call. Wider distribution is entire WA excluding Kimberley.

VESPERTILIONIDAE

Lesser Long-eared Bat *Nyctophilus geoffroyi*

Two records from FRNP; sub-fossil remains found in an owl accumulation at Joonacoonack Bluff (34°01'40"S, 119°28'10"E) in FRNP in 1984 (A. Baynes *pers. comm.*) and at the Phillips River in the FRNP (33°44'S 119°56'E). Supplemented by nine records in the WAM collection. Wider distribution is entire WA.

Gould's Wattle Bat *Chalinolobus gouldii*

One record from one site: RNOBC from flat-topped or swamp yate *Eucalyptus occidentalis* woodland. Identified by call recording. Sub-fossil remains found at the Phillips River in the FRNP (33°44'S 119°56'E), with seven records from the WAM collection. Wider distribution is entire WA.

Chocolate Wattle Bat
Chalinolobus morio

One record from a mine adit at Mt Chester in the Ravensthorpe Range with a maternity colony present in October 1979, and eight records from the WAM collection. Wider distribution is southern WA with isolated occurrence in Pilbara.

Southern Forest Bat *Vespadelus regulus*

One record, sub-fossil remains found at the Phillips River in the FRNP (33°44'S 119°56'E). Supplemented by seven records from four sites in the WAM collection. Wider distribution is southern WA.

MURIDAE

Mitchell's Hopping-mouse
Notomys mitchellii

18 records from six sites: GA05, OT13A, OT13C, OT13F, OT16A, SC07. In the north eastern FBR with 17 records from mallee heath and one record from heath habitat. Supplemented by seven records from five sites sourced in the WAM collection. Also FRNP. Wider distribution is southern WA excluding inner south-west.

Ash-grey Mouse *Pseudomys albocinereus*

22 records from 7 sites: 45A, 51A, 53A, 62B, 63B, OT13B, RNO7, in the eastern study area. Recorded from mallee heath, with one record from riparian woodland. Supplemented by 30 records from 20 sites sourced in the

WAM collection. Also FRNP. One record of a pregnant female in November. Wider distribution is south-west WA excluding inner south-west.

Western Mouse *Pseudomys occidentalis*

249 records from 20 sites: 12A, 13B, 14A, 16A, CK01, CO03, ETC, NR10B, OT10C, OT10D, OT13A, OT13B, OT13C, OT13D, OT13F, RA13, RNOCMS1, RNOCMS2, RNOE2, RNOE4 in the northern and eastern FBR. Recorded mainly from mallee heath with a few records from woodland, granite complex, heath habitats. A common element to all sites is patches of extremely dense vegetation. Supplemented by 30 records from 17 sites sourced in the WAM collection. Also FRNP. Pregnant females recorded in June and July, with nipple development in July and November. Wider distribution is the south-east of south-west WA.

Heath Rat *Pseudomys shortridgei*

77 records from 11 sites: OT13A, OT13B, OT13C, OT13D, OT13F, RA07, RA13, RNO4, RNOE3, RNOE5, RNOE7. These were all mallee heath habitats in the Ravensthorpe area. During the surveys from 1993–1997 the Heath Rat was captured in shrub mallee with either a heath or scrub understorey on loamy-sand or sandy loam with a lateritic component. The age of the vegetation at these capture sites was between 30 and over 70 years, though its capture rate was

higher in the younger vegetation (30 years). In 2000 during surveys at Bandalup Hill, five animals were captured. The habitat at the capture sites included dense mallee on a stony, clay soil, shrubland on granite and *Eucalyptus gardneri* ssp. *ravensthorpensis* that had been burnt previously in November 1980. Heath Rats were captured at three sites in the Ravensthorpe Range during 1982–1984. The habitat comprised shrub mallee with a scrub understorey over sedges on loamy sand with laterite and sandy light clay on greenstone. These data are supplemented by nine records from six sites sourced in the WAM collection. Also FRNP. A lactating female captured in November at Bandalup Hill. Wider distribution is over three localities (with multiple sites) in the south-east of south-west WA.

Water-rat *Hydromys chrysogaster*

One record from one site; adult male in May 1989 from just east of the Gairdner River on the boundary of the FRNP which then was the most easterly record. Since these data were compiled there are two records from Culham Inlet and Phillips River (Chapman and Chuwen 2010). Wider distribution is inner south-west WA, northwest coast and Kimberley.

House Mouse *Mus musculus*

868 records from 63 sites: 12A, 14A, 16A, 26B, 28B, 29B, 31B, 51A, 53A, 62B, 63B, CK01, CK02, CO01A,

CO01B, CO01C, CO03, CO03A, ETD, NR01, NR01A, NR01C, NR02, NR09, NR10C, NR11A, NR11B, OT10A, OT10B, OT10D, OT12B, OT13A, OT13B, OT13C, OT13D, OT13F, P5, PNI1A, PNI1B, PNI1C, PNI1D, PNI5, PNI6A, RA07, RA08, RA13, RNO1, RNOCMS1, RNOCMS2, RNOCMS3, RNOCMS4, RNOE1, RNOE2, RNOE3, RNOE4, RNOE5, RV04, RV06A, SC01, SC03, SC04, SC06, SC07. Recorded from all habitats. Supplemented by 80 records from 27 sites sourced in the WAM collection. Also FRNP. Recorded as pregnant and lactating during August and November. An introduced species. Wider distribution is entire WA excluding Kimberley.

Bush Rat *Rattus fuscipes*

708 records from 47 sites: 14A, 28B, 29B, 31B, 32B, 45A, 51A, 53A, 62B, 63B, CO01B, FRNP, NR01, NR01A, NR11A, OT10A, OT10B, OT12B, OT13A, OT13B, OT13C, OT13D, OT13F, P5, PNI5, PNI6A, PNI6B, RA07, RA08, RA09D, RA09M, RA13, RNO4, RNO6, RNOCMS1, RNOCMS2, RNOCMS3, RNOCMS7, RNOE1, RNOE2, RNOE3, RNOE4, RNOE5, RV06A, RV06B, SC03, SC07. Recorded mainly from mallee heath with a few records from heath, riparian woodland, granite complex and coastal dunes habitats. Supplemented by 93 records from 38 sites in the WAM collection. Also FRNP. Dependent young July and September, nipple development noted in November. Wider distribution is mesic parts of south-west WA including many islands.

Black Rat *Rattus rattus*

11 records from four sites: GA01, NR02, SC03, SC07, around towns and in the Gairdner Nature Reserve in wetland complex northwest of Jerramungup. Supplemented by nine records from nine sites in the WAM collection. An introduced species. Wider distribution is south-western WA and north-west coastal areas.

CANIDAE

Fox *Vulpes vulpes*

45 records from 35 sites: 62B, CO01B, CO01C, CO02A, CO03, CO03C, CO03D, FRNP, NR02, NR05, NR10, NR11, NR11A, OT01A, OT02A, OT02C, OT09, OT10, OT13B, OT13C, OT16B, PN01A, PN03, PN04, PNI6C, RA08, RA13, RNO4, RNO7, RNOCMS1, RV06, RV06B, RV09, SC03, SC07, throughout the FBR. An introduced species. Wider distribution is much of WA excluding Kimberley with range contracting south in poor seasonal conditions.

FELIDAE

Cat *Felis catus*

13 records from seven sites: NR10, NR11, OT09, RNO5, RNO6, RNOE6, SC03.

It is likely that this species is much more common than these results show. Also FRNP. An introduced species. Wider distribution is entire WA.

BOVIDAE

Goat *Capra hircus*

50 records from four sites: OT12B,

OT13D, PN11, RA08, around the Ravensthorpe area. These animals have been removed from the FRNP and Ravensthorpe Range since these sightings. Occasionally feral but not naturalized species in FBR. Wider distribution is central arid zone of WA with few localized occurrences in south-west.

SUIDAE

Pig *Sus scrofa*

Three sightings from a single site: CO01B. These animals were domestic pigs that had escaped from a neighboring farm. Occasionally feral but not naturalized species in FBR. Wider distribution is more mesic parts of south-west WA, north-west coast and Kimberley.

LEPORIDAE

Rabbit *Oryctolagus cuniculus*

507 records from 29 sites: 05B, CO01A, CO01B, CO03A, CO03B, CO03C, CO03D, GA04, GA05, NR02, NR05, NR09, OT01B, OT02A, OT06, OT09, OT10, OT11A, OT16A, PN01A, PN02, PN04, PN05A, PN11, PN11C, RV04, RV06B, RV07, SC07. Also FRNP. An introduced species. Wider distribution is much of WA excluding north Pilbara and Kimberley.

List of presumed extinct mammals

PERAMELIDAE

Western Barred Bandicoot, Marl
Perameles bougainville bougainville

Sub-fossil remains found at five sites in the FRNP. Three sites,

including an owl accumulation, at Joonacoonack Bluff during March 1984; a small cave in the Eyre Range in September 1986 and a small site in the Hamersley River gorge in December 1985 (A. Baynes *pers. comm.*). Current distribution is now Bernier and Dorre Islands, Shark Bay.

THYLACOMYIDAE

Bilby *Macrotis lagotis*

One adult male specimen (M 16 100) collected by J. T. Tunney on 15/06/1900 at 33°55'S 118°58'E, at the Gairdner River 6km east Jerramungup in the WAM collection. Current distribution is restricted to scattered populations in arid zone (Gibson and Great Sandy Deserts and eastern Pilbara) and the southern Kimberley

DASYURIDAE

Kultarr *Antechinomys laniger*

Sub-fossil remains found at two sites, including an owl accumulation at Joonacoonack Bluff in the FRNP in 1984 (A. Baynes *pers. comm.*). Current distribution is central arid zone in WA.

POTOROIDAE

Broad-faced Potoroo *Potorous platyops*

Sub-fossil remains found at two sites in the FRNP, an owl accumulation at Joonacoonack Bluff during March 1984 and a small cave in the Eyre Range in September 1986 (A. Baynes *pers. comm.*). This species is extinct throughout its range.

MACROPODIDAE

Banded Hare-wallaby *Lagostrophus fasciatus*

Sub-fossil remains found in an owl accumulation at Joonacoona Bluff in the FRNP in 1984 (A. Baynes *pers. comm.*).

Quokka *Setonix brachyurus*

One specimen record only (M 10519), a bone from a sub fossil deposit, from Hunter River near Bremer Bay. Wider distribution is confined to a few separate occurrences in inner south-west WA and Rottnest Island.

MURIDAE

Pale Field-rat *Rattus tunneyi*

Sub-fossil remains found at two sites, including an owl accumulation at Joonacoona Bluff in the FRNP in 1984 (A. Baynes *pers. comm.*). Its current distribution includes Shark Bay and Kimberley

Mammal Discussion

The six most commonly recorded species with greater than 200 records in descending order were House Mouse (n=868), Bush Rat (n=708), Honey Possum (n=548), Rabbit (n=507), Western Mouse (n=249) and Western Grey Kangaroo (n=244). The other species comprised less than 100 records.

There were 1953 capture events of murid rodents easily making them the most commonly recorded family in the FBR. This is reflected by the fact that rodents made up three of the top

five most commonly recorded species. The Tarsipedidae was the second most commonly encountered family with 548 records, followed by the Macropodidae (278 records), Burrymyidae (99 records) and the Dasyuridae (90 records). The remaining families were represented by 50 or fewer records.

The method of capture was noted for 865 rodent records (*Notomys mitchellii*, *Pseudomys albocinereus*, *P. occidentalis*, *P. shortridgei*, *Rattus fuscipes* and *R. rattus*), 81 dasyurid records (*Sminthopsis* spp, *Parantechinus apicalis* and *Phascogale calura*), 88 *Cercartetus concinnus* records and 442 *Tarsipes rostratus* records. There was a clear disparity between the method of capture amongst the groups with 95% of rodent captures recorded from Elliott traps and just 5% from pit traps. In contrast, 70% of dasyurid captures were from pits and just 30% from Elliotts (note a single *P. apicalis* was recorded from a cage trap and included with Elliotts in the analysis). When the dasyurids are examined in isolation the larger species including *Parantechinus apicalis* and *Phascogale calura* were rarely, in the case of the former (n=1), or never, in the latter case recorded from pit traps, whilst 86% of *Sminthopsis* spp captures were from pit traps with 14% (all attributed to *Sminthopsis g. griseoventor*) from Elliott traps. Similarly 99% of capture records of *Tarsipes rostratus* and all but two *Cercartetus concinnus* were

from pit traps. Just one *Tarsipes rostratus* was recorded from an Elliott trap and four were either raked from debris or observed actively foraging.

As with the herpetofauna sampling, methodology clearly has some bearing on the species that will be recorded. Medium sized Elliott traps were the best means of capturing most rodents (the exception being *Hydromys chrysogaster*) and the mid-sized dasyurids (*Parantechinus apicalis* and *Phascogale calura*). However, the use of this technique exclusively would miss *Cercartetus concinnus* and *Tarsipes rostratus* and most *Sminthopsis* spp. *Trichosurus v. vulpecula* and *Felis catus* were the only mammal species that were predominantly recorded from cage traps. Other species recorded in cage traps included *Mus musculus*, *Parantechinus apicalis*, *Rattus fuscipes*, *R. rattus*, and *Vulpes vulpes*. Records of larger species including *Tachyglossus aculeatus*, *Dasyurus geoffroii*, and *Isodon obesulus* came mainly from identification of road kills, tracks, scats or diggings.

Not surprisingly the mammalian fauna of the FBR comprises species with a mostly south-west distribution. Indeed most extant species recorded from the FBR are endemic to the south-west region. At the bioregional level the ESP bioregion supports 36 extant species including five introduced species (source WAM Fauna Base). One species, the New Zealand Fur Seal *Arctocephalus*

forsteri, breed on Red Islet which is off (but included within) FRNP. Of the remaining native species known from the ESP bioregion, all have been recorded from the Biosphere Reserve.

Most mammal groups, with the exception of the bats, are well represented within the FBR. A lack of structured sampling using both netting and call recording probably accounts for the few bat records collected.

At the time of the FBR study, A. Baynes (WAM) provided data on sub-fossil remains collected from four areas within the FRNP during the 1980s (A. Baynes *pers. comm.*). These data show that there are five species of mammal that are now presumed locally extinct in the area (*Antechinomys laniger*, *Perameles bougainville*, *Setonix brachyurus*, *Macrotis lagotis*, and *Rattus tunneyi*). Two additional taxa, *Potorous platyops* and *Lagostrophus fasciatus* are now extinct over their entire range.

The age of the sub-fossil deposits are unknown but *Mus musculus* were absent from the fauna and, in most of Australia, this would indicate that the accumulation of material had ceased prior to European occupation. Baynes concluded that the Joonacoonack Bluff remains probably represent the "original" fauna of the FRNP i.e. all the species were part of the long term late Holocene fauna which only underwent dramatic change as a result of the arrival of Europeans (A. Baynes *pers. comm.*).

Other mammal species found in

the deposits comprising the “original” fauna include *Antechinus flavipes*, *Parantechinus apicalis*, *Phascogale calura*, *Sminthopsis dolichura*, *S. granulipes*, *S. griseoventer*, *Isodon obesulus*, *Trichosurus vulpecula*, *Macropus eugenii*, *Cercartetus concinnus*, *Tarsipes rostratus*, *Chalinolobus gouldii*, *Eptesicus regulus*, *Nyctophilus geoffroyi*, *Notomys* sp?, *Pseudomys albocinereus*, *P. occidentalis*, *P. shorridgei* and, *Rattus fuscipes*.

GENERAL DISCUSSION

The principal conclusion arising from this study is that the FBR retains a rich and abundant vertebrate fauna with several species that were much more widespread prior to European settlement now confined, or almost so, to the FBR. Reasons for this are the quality and quantity of natural vegetation and its connectivity. The importance of the very low incidence of *Phytophthora* dieback disease compared to elsewhere in the south-west of WA cannot be over emphasized.

Threatened Fauna

Classification of rare and endangered fauna under the *Wildlife Conservation (Specially Protected Fauna) Notice 2010* recognises four distinct schedules of taxa: Schedules 1–4, and taxa are ranked as extinct, or for level of threat as either critically endangered, endangered or vulnerable. In addition DEC lists five levels of priority

listed fauna for species whose status is less certain but suspected to be threatened.

A total of six mammal, ten bird and one reptile species that have been recorded in the study area are listed as threatened under the *Wildlife Conservation (Specially Protected Fauna) Notice 2010* (Table 3). In addition a further five mammal, seven bird and two reptile species are priority listed species by DEC (Table 3).

The species having a significant part of their distributional range, or significant populations, within the FBR include the Southern Dibbler, Heath Rat, Western Mouse, Malleefowl, Hooded Plover, Ground Parrot, Western Whipbird, Western Bristlebird and *Lerista viduata* (which is endemic to the FBR). Former and current distributions and threatening processes are given in the following species accounts. All of these species are subject to either draft or current recovery management plans.

Southern Dibbler *Parantechinus apicalis*

The Dibbler once had a distribution that covered the northern Kwongan from Shark Bay south to near Perth. It was also present in the southern Kwongan from Albany to Israelite Bay and on the Eyre Peninsula, South Australia. It was thought to be extinct until 1967 when it was rediscovered at Cheyne Beach, near Albany, and since then in FRNP (Van Dyck and Strahan 2008).

Table 3. Threatened fauna and priority listed species recorded in the Fitzgerald Biosphere Reserve at August 2010

<p>Schedule 1 species Chuditch (Vulnerable) Southern Dibbler (Endangered) Red-tailed Phascogale (Endangered) Brush-tailed Bettong, Woylie (Endangered) Quokka (Vulnerable) Heath Rat (Vulnerable) Malleefowl (Vulnerable) Cape Barren Goose (Vulnerable) Atlantic Yellow-nosed Albatross (Vulnerable) Wandering Albatross (Vulnerable) Australasian Bittern (Endangered) Carnaby's Black- Cockatoo (Endangered) Western Rosella (Vulnerable) Ground Parrot (Critically Endangered) Western Bristlebird (Vulnerable)</p>	<p>Other specially protected fauna Peregrine Falcon Carpet Python</p>
<p>Priority 1 species <i>Lerista viduata</i></p>	<p>Priority 2 species Barking Owl</p>
<p>Priority 3 species Common Death Adder</p>	<p>Priority 4 species Southern Brown Bandicoot Western Brush Wallaby Western Mouse Water-rat Australian Bustard Bush Stone-curlew Hooded Plover Western Whipbird (western mallee subspecies) Crested Shrike-tit Crested Bellbird</p>
<p>Priority 5 species Tamar Wallaby</p>	

The FBR Dibbler population is very significant in that it is one of only three that are currently known. The others occur on Whitlock and Boullanger Islands at Jurien Bay. In total they have been captured at approximately 18 sites within the FRNP (Friend 2003).

Reasons for this species decline are thought to include land clearing and predation by feral predator. Other threats include altered fire regimes, with island populations being threatened by the potential of introduced ferals, such as rats.

Heath Rat *Pseudomys shortridgei*

Prior to European settlement the Heath Rat had a distribution that covered the coastal heaths of the west and south coasts from Shark Bay to Point Culver, at the western end of the Great Australian Bight. Records were also collected from the wheatbelt at Woylerling and Buniche. The Heath Rat seemed to disappear after 1931 and 56 years later it was rediscovered in the Ravenshorpe Range (Baynes *et al.* 1987). Subsequently the Heath Rat has been captured at various sites in the Ravenshorpe Range, FRNP, Dragon Rocks and Lake Magenta Nature Reserves. It has been estimated that it has suffered a 50–90% reduction in range as a consequence of clearing of its preferred habitat and, to a lesser extent, predation by the introduced Fox and Cat (Lee 1995). Recent molecular investigations of this species have found that the eastern and western populations do not warrant separation at the species level (Cooper *et al.* 2003).

Western Mouse *Pseudomys occidentalis*

The historic distribution of this species included coastal areas from Jurien Bay to Margaret River and across the Nullarbor Plain to the Eyre Peninsula and Kangaroo Island, South Australia. It may have been in decline before European settlement as is suggested by sub-fossil remains. However more recently its decline has been attributed to

habitat destruction, altered fire regimes and, possibly, predation by foxes and cats.

Malleefowl *Leipoa ocellata*

The Malleefowl was once a widespread species that could be readily found in suitable habitat in southern Australia from the west coast to the Great Dividing Range in the east. Over the past century its range has diminished, particularly in the arid areas and the agricultural zones across the country. In Western Australia it can be found in scattered populations through the pastoral zone, the wheat growing areas and the central south coast. It is threatened predominantly by native vegetation clearing, predation of eggs and young birds by foxes and cats and increased frequency of fire that removes leaf litter required for mound building.

Ground Parrot *Pezoporus wallicus*

Previously recorded from north of Perth and in several localities between Albany and Cape Arid. Currently it is FBR's most endangered vertebrate known only from limited sites within FRNP and Cape Arid National Parks. In 1992 there were an estimated 350 birds in FRNP (Garnett 1992). The estimate had declined to >100 in the early 2000s and to 16 by 2008 (Friends of Western Ground Parrot Newsletter, February 2009). Its imminent extinction here is very likely. Various reasons have been put forward to explain its decline in WA

(Burbidge *et al.* 1997). The most important are thought to be habitat destruction caused by clearing and a change in frequency of fires since historical times. Also of consideration are the effects of predation by cats and foxes and disruption to its preferred heath habitats caused by the dieback disease *Phytophthora cinnamomi*.

Hooded Plover *Thinornis rubricollis*

There is no evidence that the range of the Hooded Plover has contracted and there is insufficient data available to determine if its numbers have diminished (Raines 2002). They occur almost entirely in the south of WA and sightings have been clustered into five key areas of which the beaches of the FBR comprise one such "Hooded Plover Management Region" (Raines 2002). This species is especially vulnerable during breeding with the well camouflaged eggs and flightless young being destroyed or disturbed by pedestrians, dogs, horses, stock, four-wheel drive bikes and vehicles and trail bikes. They are also hunted by foxes, cats and dogs.

Western Whipbird *Psophodes nigrogularis oregon*

Although there has probably been no overall range contraction of this species, its habitat has certainly been fragmented by land clearing in the north of its range. Note that this situation does not apply to *P. nigrogularis*

nigrogularis that has become extinct at three west coast localities and probably also at Wongan Hills (Johnstone and Storr 2004). Threats to this species include habitat clearance and subsequent fragmentation, disturbance caused by grazing stock, changes in fire frequency and nest predation by foxes and cats.

Western Bristlebird *Dasyornis longirostris*

Previously found along coastal regions from Perth to Augusta and from close to Albany to the eastern end of the FRNP. Bristlebirds prefer low, dense shrubby heath or Kwongan and scattered patches of mallee are sometimes present (Burbidge 2004). Land clearing is responsible for its decline in the past and its remaining populations are now under threat from wildfire (Burbidge 2004). The populations in the FRNP are significant owing to the extent of their range reduction and the fact that the only other known populations are close to Albany some 200km to the west.

Lerista viduata

This small skink is the only vertebrate endemic in the FBR. As it is only known from several records in few localities near Mt McMahon in the Ravensthorpe Range it could be threatened by either wildfire or mining development.

Threatening Processes and their Management

While most threatening processes operate at the landscape scale it is important to recognise that their principal effects in the Biosphere Reserve may be at certain critical points. Identification of these points is integral to the management of threatening processes here. For example, the effects of dryland salinity, unlike elsewhere in the WA cereal producing area that are not as effectively drained, are mainly manifest in rivers and creeks and their associated riparian vegetation. Here salinisation and/or waterlogging, more particularly the latter, may replace structurally and floristically diverse woodlands and shrublands with salt tolerant succulent heath (samphire) vegetation. This is apparent on the upper Phillips River (DoE 2003) and has been identified as a future threat to the inland fish fauna (Chapman 2003). Similarly wetlands as the endpoints of internal drainages are affected by increased run-off due to land clearing and salinisation by higher water levels, increased residence time (or permanence) of water or soil moisture and vegetation death within.

Similarly the effects of *Pythophthora* dieback spread are influenced by climatic, topographic and vector access factors. Thus although 60% of Stirling Range National Park is affected, only 0.1% of FRNP is and this is attributed largely to controlled

access to the latter (<http://www.dec.wa.gov.au/content/view/213/2051/1/2/>). The recent confirmation of dieback infestations on the Susetta River and off Pabelup Drive in FRNP are particularly threatening. In Stirling Range National Park dieback infestation has caused a 70% reduction in vegetation cover where 2m proteaceous shrublands have been replaced by 1m. A similar change in Fitzgerald River National Park would be not only devastating to its renowned flora, but also to many species of mammals, birds and invertebrates dependent upon its floriferous, proteaceous and myrtaceous species.

The role of fire, both wildfire and hazard reduction burning in FBR landscapes, will always be controversial as it is an intrinsically difficult issue with strong economic, environmental, social and emotional dimensions. While the case to limit the extent of the huge fires which burnt in Fitzgerald River National Park in 1989 and 1997/98 is largely uncontested, the means by which this is achieved is more controversial. Now that much greater financial and human resources are being made available within the FBR and there are technological advances e.g. GIS, GPS and satellite imagery for fire management there is a case for improved planning, justification and particularly communication of proposed management or mitigation actions. For example, now that

vegetation connectivity and corridor linkages are assuming a critical role (see comments below re-climate change) there is a case to consider the role of hazard reduction burning and firebreak construction on vegetation connectivity.

Discussions on the effect of climate change on the Australian environment usually mention south-west WA as a region of particular concern (e.g. Allen Consulting Group 2005, Pittock 2003). In particular, a 20% decrease in rainfall is predicted over the next 30–50 years that will impact particularly on the heathlands of the south-west due to their non moisture retentive soils. Additionally, the south-west is identified as one of three regions in Australia where the risk and vulnerability to climate change including reduced rainfall (but increased rainfall intensity and flooding), increased wildfire risk and storm incidence may occur. Relatively small increases in temperature are more likely to be detrimental to fauna in the south-west than elsewhere in Australia except for alpine regions. These considerations justify and suggest much greater effort is required in establishing vegetation connectivity at the landscape scale and that the orientation of the connection needs be parallel to the anticipated gradient of change.

The impact of feral predators, Fox and Cat, on native fauna in the Biosphere is largely addressed

through DEC's *Western Shield* program. We support the independent review of Possingham *et al.* (2004) who recommended it be continued, expanded when resources are available and extended to feral cat control. One of the authors (AC) has lived within the FBR for 20 years, nine years prior to western shield and 11 years after its inception and has unpublished data that shows an increase in numbers of Brush Wallaby, Chuditch, Carpet Python, Malleefowl and Bush Thick-knee co-inciding with the commencement of western shield. In the case of Brush Wallaby there has been a shift in habitat occupancy from dense mallee/shrublands to open woodlands and even paddocks.

The invasion of bushland by weeds is not adequately acknowledged or managed in the Biosphere. Remnant vegetation, riparian corridors and reserve or national park boundaries where they adjoin farmland are vulnerable and river valleys through farmland following fire are particularly vulnerable. Two of 18 of Australia's worst environmental weeds according to Humphries *et al.* (1991) occur in the Biosphere; these are Bridal Creeper *Asparagus asparagoides* and Athel Pine *Tamarix aphylla*. The former in particular is very invasive in local coastal and riparian environments including in FRNP. There have been small-scale local successes in controlling it with leaf hoppers and more particularly with a rust

infection. Weeds are mentioned in this account of fauna as they are indicators of environmental degradation and habitat change which will eventually affect faunal habitats.

Mining and infrastructure location associated with resource development projects will require a high level of environmental impact assessment in the FBR due to the fragmented, and in some cases very restricted distributions, of some threatened vertebrate species.

This brief account of threatening processes in the Biosphere includes six of the eight priority environmental issues facing Western Australia according to EPA (2006). The two outstanding issues are excessive consumption and greenhouse gas emissions that although pertinent to the FBR are global rather than regional in their impact.

ACKNOWLEDGEMENTS

We thank BHP Billiton (Raventhorpe Nickel Operations Pty Ltd) for financing some data compilation, Piers Higgs for producing some of the figures, Michi Maier, Mike Craig and Alan Danks for commenting on early drafts. Alex Baynes provided data and discussion on the past mammal fauna.

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Appendix I. Site and trapping effort details for surveys in the Fitzgerald Biosphere Reserve

Site	Longitude	Latitude	Location	Dates	Vegetation	Trapping Effort (trap nights)
Fitzgerald River Biosphere Reserve Project						
04B	119.246	-33.982	FRNP Northern Firebreak	November 96; October 97	Riparian Woodland	200 20 120
05B	119.247	-33.981	FRNP Northern Firebreak	November 96; October 97	Riparian Woodland	200 20 120
12A	119.339	-33.911	FRNP Northern Firebreak	November 96; October 97	Mallee-heath	200 20 120
13B	119.305	-33.933	FRNP Northern Firebreak	Opportunistic	Mallee-heath	Opportunistic
14A	119.305	-33.938	FRNP Northern Firebreak	November 96; October 97	Mallee-heath	200 20 120
16A	119.277	-33.963	FRNP Northern Firebreak	November 96; October 97	Woodland	200 20 120
25B	119.369	-34.022	FRNP Twertup Track	October 96; October 97	Mallee-heath	200 20 120
26B	119.372	-34.022	FRNP Twertup Track	October 96; October 97	Woodland	200 20 120
28B	119.366	-34.021	FRNP Twertup Track	October 96; October 97	Mallee-heath	200 20 120
29B	119.351	-34.015	FRNP Twertup Track	October 96; October 97	Heath	200 20 120
31B	119.287	-34.026	FRNP Twertup Track	October 96; October 97	Mallee-heath	200 20 120
32B	119.338	-34.065	FRNP Twertup Track	Opportunistic	Mallee-heath	Opportunistic
45A	119.923	-33.900	FRNP Hamersley Drive	November 96; November 97	Riparian Woodland	200 20 120
51A	119.912	-33.880	FRNP Hamersley Drive	November 96; November 97	Mallee-heath	200 20 120
53A	119.965	-33.870	FRNP Hamersley Drive	November 96; November 97	Mallee-heath	200 20 120
54A	119.778	-33.779	FRNP Hamersley Drive	Opportunistic	Heath	Opportunistic
58B	119.803	-33.787	FRNP Hamersley Drive	Opportunistic	Mallee-heath	Opportunistic
59A	119.850	-33.779	FRNP Hamersley Drive	Opportunistic	Riparian Woodland	Opportunistic
62B	119.914	-33.851	FRNP Hamersley Drive	November 96; November 97	Mallee-heath	200 20 120
63B	119.915	-33.846	FRNP Hamersley Drive	November 96; November 97	Mallee-heath	200 20 120
CK00	0	0	Corackerup Nature Reserve	Opportunistic	Various	Opportunistic
CK01	118.708	-34.193	Corackerup Nature Reserve	October 96; October 97	Mallee-heath	200 20 120
CK02	118.626	-34.191	Corackerup Nature Reserve	October 96; October 97	Mallee-heath	200 20 120
CK03E	118.651	-34.225	Corackerup Nature Reserve	October 96	Mallee-heath	100 - -

Appendix I. (cont.)

Site	Longitude	Latitude	Location	Dates	Vegetation	Trapping Effort (trap nights)
						Elliott Cage Pitfall
CO01	118.771	-34.188	Corackerup Creek Corridor	Opportunistic	Riparian Woodland	Opportunistic
CO01B	118.737	-34.175	Corackerup Creek Corridor	December 93; October 94	Mallee-heath	200 20 200
CO01C	118.713	-34.267	Corackerup Creek Corridor	December 93; October 94	Riparian Woodland	200 20 200
CO02	118.704	-34.304	Pallinup River Corridor	Opportunistic	Riparian Woodland	Opportunistic
CO02A	118.704	-34.304	Pallinup River Corridor	Opportunistic	Riparian Woodland	Opportunistic
CO03	119.191	-33.704	Fitzgerald River Corridor	Opportunistic	Mallee-heath	Opportunistic
CO03A	119.191	-33.704	Fitzgerald River Corridor	December 93; November 94	Heath	660 72 660
CO03B	119.258	-33.808	Fitzgerald River Corridor	Opportunistic	Riparian Woodland	Opportunistic
CO03C	119.283	-33.866	Fitzgerald River Corridor	Opportunistic	Riparian Woodland	Opportunistic
CO03D	119.23	-33.750	Fitzgerald River Corridor	Opportunistic	Riparian Woodland	Opportunistic
ETA	119.243	-33.977	FRNP Northern Firebreak	October 96	Riparian Woodland	100 5 -
ETB	119.247	-33.977	FRNP Northern Firebreak	October 96	Woodland	135 - -
ETC	119.263	-33.968	FRNP Northern Firebreak	November 96; September 97	Heath	200 - -
ETD	119.933	-33.816	FRNP Northern Firebreak	November 96	Granite Complex	100 - -
ETE	119.933	-33.851	FRNP Northern Firebreak	November 96	Mallee-heath	100 - -
FRNP	0	0	Various in FRNP	Opportunistic	Various	Opportunistic
GA01	0	0	Various in FBR	Opportunistic	Various	Opportunistic
GA02	0	0	Various in FBR	Opportunistic	Various	Opportunistic
GA03	0	0	Various in FBR	Opportunistic	Various	Opportunistic
GA04	0	0	Various in FBR	Opportunistic	Various	Opportunistic
GA05	0	0	Various in FBR	Opportunistic	Various	Opportunistic
GA06	0	0	Various in FBR	Opportunistic	Various	Opportunistic
NR01	118.629	-34.200	Corackerup Nature Reserve	Opportunistic	Mallee-heath	Opportunistic
NR01A	118.629	-34.200	Corackerup Nature Reserve	March 93	Granite Complex	Opportunistic
NR01B	118.668	-34.208	Corackerup Nature Reserve	Opportunistic	Granite Complex	250 50 -
NR01C	118.713	-34.182	Corackerup Nature Reserve	March 93	Mallee-heath	- 32 -

NR02	118.811	-33.819	Gairdner Nature Reserve	April 93	Woodland	144	52	-
NR03	118.693	-34.420	Pallinup Nature Reserve	Opportunistic	Riparian Woodland	Opportunistic		
NR04	118.637	-34.008	Holden Road Nature Reserve	Opportunistic	Mallee-heath	Opportunistic		
NR05	120.259	-33.237	Kundip Nature Reserve	Opportunistic	Mallee-heath	Opportunistic		
NR06	120.003	-33.522	Overshot Hill Nature Reserve	Opportunistic	Mallee-heath	Opportunistic		
NR07	120.073	-33.316	Hayes Road Nature Reserve	Opportunistic	Mallee-heath	Opportunistic		
NR08	119.783	-33.658	Koornong Nature Reserve	Opportunistic	Mallee-heath	Opportunistic		
NR09	119.755	-33.579	Long Creek Nature Reserve	Opportunistic	Shrubland	Opportunistic		
NR10	119.677	-33.490	Aerodrome Road Nature Reserve	Opportunistic	Wetland Complex	Opportunistic		
NR10A	119.677	-33.490	Aerodrome Road Nature Reserve	September 95	Shrubland	175	25	-
NR10B	119.677	-33.490	Aerodrome Road Nature Reserve	September 95	Heath	105	-	105
NR10C	119.677	-33.490	Aerodrome Road Nature Reserve	September 95	Shrubland	-	25	105
NR11	120.440	-33.946	Jerdacuttup Lakes Nature Reserve	Opportunistic	Coastal Dune Complex	Opportunistic		
NR11A	120.440	-33.946	Jerdacuttup Lakes Nature Reserve	November 93; December 94	Coastal Dune Complex	440	132	440
NR11B	120.438	-33.946	Jerdacuttup Lakes Nature Reserve	November 93; December 94	Coastal Dune Complex	440	132	440
NR11C	120.297	-33.939	Jerdacuttup Lakes Nature Reserve	Opportunistic	Coastal Dune Complex	Opportunistic		
NR11D	120.426	-33.925	Jerdacuttup Lakes Nature Reserve	Opportunistic	Coastal Dune Complex	Opportunistic		
NR11G	120.426	-33.915	Jerdacuttup Lakes Nature Reserve	Opportunistic	Coastal Dune Complex	Opportunistic		
OT01A	118.656	-34.075	Water & Gov't Requirements	Opportunistic	Heath	Opportunistic		

Appendix I. (cont.)

Site	Longitude	Latitude	Location	Dates	Vegetation	Trapping Effort (trap nights)
OT01B	118.654	-34.069	Water & Gov't Requirements	Opportunistic	Woodland	Opportunistic
OT01C	118.654	-34.057	Water & Gov't Requirements	Opportunistic	Mallee-heath	Opportunistic
OT02A	118.993	-34.016	Carlawillup Rockhole Camping Reserve	Opportunistic	Woodland	Opportunistic
OT02B	118.988	-34.013	Carlawillup Rockhole Camping Reserve	Opportunistic	Mallee-heath	Opportunistic
OT02C	118.984	-34.016	Carlawillup Rockhole Camping Reserve	Opportunistic	Mallee-heath	Opportunistic
OT03	119.273	-34.436	Minerup Private Property	Opportunistic	Wetland Complex	Opportunistic
OT04	119.166	-34.416	Common & Recreation Reserve	Opportunistic	Coastal Dune Complex	Opportunistic
OT04A	119.166	-34.416	Common & Recreation Reserve	Opportunistic	Coastal Dune Complex	Opportunistic
OT04B	119.066	-34.450	Common & Recreation Reserve	Opportunistic	Coastal Dune Complex	Opportunistic
OT04C	118.902	-34.463	Common & Recreation Reserve	Opportunistic	Coastal Dune Complex	Opportunistic
OT05	120.102	-33.872	Steele River Crossing John Forest Rd	Opportunistic	Riparian Woodland	Opportunistic
OT06	120.295	-33.812	Cnr Middle & Tamarine Rd	Opportunistic	Mallee-heath	Opportunistic
OT06A	120.295	-33.812	Cnr Middle & Tamarine Rd	Opportunistic	Mallee-heath	Opportunistic
OT07	120.383	-33.755	Government Requirements Reserve	Opportunistic	Mallee-heath	Opportunistic
OT07A	120.383	-33.755	Government Requirements Reserve	Opportunistic	Mallee-heath	Opportunistic

OT08A	120.168	-33.694	Kundip Townsite	Opportunistic	Woodland	Opportunistic
OT08B	120.178	-33.693	Kundip Townsite	Opportunistic	Mallee-heath	Opportunistic
OT08C	120.183	-33.692	Kundip Townsite	Opportunistic	Mallee-heath	Opportunistic
OT09	120.329	-33.648	Conservation of Flora Reserve	Opportunistic	Mallee-heath	Opportunistic
OT09A	120.329	-33.648	Conservation of Flora Reserve	Opportunistic	Mallee-heath	Opportunistic
OT10	120.355	-33.655	Bandalup Hill	Opportunistic	Mallee-heath	Opportunistic
OT10A	120.355	-33.655	Bandalup Hill	November 93; October 95	Mallee-heath	200 30 190
OT10B	120.331	-33.648	Bandalup Hill	November 93; October 95	Mallee-heath	120 20 120
OT10C	120.337	-33.647	Bandalup Hill	November 93; October 95	Mallee-heath	120 20 120
OT10D	120.302	-33.681	Bandalup Hill	November 93; October 95	Mallee-heath	160 20 160
OT10E	120.302	-33.681	Bandalup Hill	Opportunistic	Mallee-heath	Opportunistic
OT11A	120.428	-33.638	Rabbit Proof Fence Rd	Opportunistic	Heath	Opportunistic
OT11B	120.333	-33.550	Rabbit Proof Fence Rd	Opportunistic	Mallee-heath	Opportunistic
OT12A	120.150	-33.491	Woodenup Pool Water Reserve	Opportunistic	Shrubland	Opportunistic
OT12B	120.135	-33.486	Woodenup Pool Water Reserve	Opportunistic	Riparian Woodland	Opportunistic
OT13A	119.957	-33.735	VCL (1040)	August 93; July 94; July 95	Mallee-heath	1215 40 -
OT13B	119.955	-33.739	VCL (1040)	August 93; July 94; July 95	Mallee-heath	1215 40
OT13C	119.953	-33.741	VCL (1040)	August 93; July 94; July 95	Mallee-heath	1215 40
OT13D	119.951	-33.745	VCL (1040)	August 93; July 94; July 95	Mallee-heath	1215 40
OT13E	119.974	-33.739	VCL (1040)	June 93	Mallee-heath	150 - -
OT13F	119.974	-33.739	VCL (1040)	June 94	Mallee-heath	- - 100
OT13H	119.976	-33.742	Carracarrup Private Property	Opportunistic	Woodland	Opportunistic
OT14	120.136	-33.630	Desmond Townsite	Opportunistic	Mallee-heath	Opportunistic
OT15	119.833	-33.425	Parklands & Recreation	Opportunistic	Riparian Woodland	Opportunistic
OT16A	119.450	-33.700	Public Utility & Camping	Opportunistic	Heath	Opportunistic
OT16B	119.518	-33.687	Public Utility & Camping	Opportunistic	Mallee-heath	Opportunistic
P17	119.100	-33.883	Jacup Dibbler Sites	Opportunistic	Mallee-heath	Opportunistic

Appendix I. (cont.)

Site	Longitude	Latitude	Location	Dates	Vegetation	Trapping Effort (trap nights)
Elliott Cage Pitfall						
P4	119.333	-33.983	Jacup Dibbler Sites	Opportunistic	Mallee-heath	Opportunistic
P5	119.333	-33.983	Jacup Dibbler Sites	Opportunistic	Mallee-heath	Opportunistic
P6	119.333	-33.983	Jacup Dibbler Sites	Opportunistic	Mallee-heath	Opportunistic
P7	119.333	-33.983	Jacup Dibbler Sites	Opportunistic	Mallee-heath	Opportunistic
PN01	118.769	-34.187	Peniup Nature Reserve	Opportunistic	Mallee-heath	Opportunistic
PN01A	118.769	-34.187	Peniup Nature Reserve	Opportunistic	Woodland	Opportunistic
PN01B	118.766	-34.088	Peniup Nature Reserve	Opportunistic	Riparian Woodland	Opportunistic
PN02	119.051	-34.000	Proposed Reserve	Opportunistic	Woodland	Opportunistic
PN02A	119.051	-34.000	Proposed Reserve	Opportunistic	Mallee-heath	Opportunistic
PN03	118.933	-34.265	Proposed Reserve	Opportunistic	Woodland	Opportunistic
PN03A	118.933	-34.265	Proposed Reserve	Opportunistic	Coastal Dune Complex	Opportunistic
PN03B	118.933	-34.265	Proposed Reserve	Opportunistic	Coastal Dune Complex	Opportunistic
PN03C	118.933	-34.264	Proposed Reserve	Opportunistic	Coastal Dune Complex	Opportunistic
PN04	118.772	-34.440	Proposed Reserve	Opportunistic	Woodland	Opportunistic
PN04A	118.772	-34.440	Proposed Reserve	Opportunistic	Coastal Dune Complex	Opportunistic
PN05A	118.684	-34.359	Proposed Reserve	Opportunistic	Woodland	Opportunistic
PN06	118.644	-33.952	Proposed Reserve	Opportunistic	Mallee-heath	Opportunistic
PN07	120.204	-33.930	Proposed Reserve	Opportunistic	Coastal Dune Complex	Opportunistic
PN09	120.126	-33.565	Carlingup Rd	Opportunistic	Woodland	Opportunistic
PN10	120.058	-33.458	Proposed Reserve	Opportunistic	Granite Complex	Opportunistic
PN11	119.916	-33.624	Cocanarup Timber Reserve	Opportunistic	Woodland	Opportunistic
PN11A	119.916	-33.624	Cocanarup Timber Reserve	December 93; November 94	Woodland	150 20 150
PN11B	119.924	-33.632	Cocanarup Timber Reserve	December 93; November 94	Woodland	150 20 150
PN11C	119.920	-33.633	Cocanarup Timber Reserve	December 93; November 94	Woodland	150 20 150
PN11D	119.891	-33.644	Cocanarup Timber Reserve	December 93; November 94	Woodland	150 20 150
PN11E	119.853	-33.539	Cocanarup Timber Reserve	Opportunistic	Woodland	Opportunistic

PN11F	119,843	-33,544	Cocanarup Timber Reserve	Opportunistic	Mallee-heath	Opportunistic	112	112	Opportunistic
PN12	119,891	-33,500	Proposed Reserve	Opportunistic	Mallee-heath	Opportunistic	-	328	Opportunistic
PN13	120,166	-33,619	Proposed Reserve	Opportunistic	Mallee-heath	Opportunistic	-	-	Opportunistic
PN14	120,150	-33,700	VCL & Common	Opportunistic	Mallee-heath	Opportunistic	112	112	Opportunistic
PN15	120,133	-33,611	Proposed Reserve	October 94	Mallee-heath	Opportunistic	-	-	-
PN16	120,100	-33,547	Proposed Reserve	October 94	Mallee-heath	Opportunistic	-	328	-
PN16A	120,597	-33,535	Proposed Reserve	Opportunistic	Mallee-heath	Opportunistic	-	-	Opportunistic
PN16B	120,157	-33,590	Ravensthorpe Range	Opportunistic	Mallee-heath	Opportunistic	-	-	Opportunistic
PN16C	120,150	33,583	Proposed Reserve	Opportunistic	Mallee-heath	Opportunistic	-	-	Opportunistic
RA07	120,321	-33,591	Ravensthorpe Range	September 96; September 97	Mallee-heath	Opportunistic	50	10	50
			Quadrats						
RA08	120,322	-33,591	Ravensthorpe Range	September 96; September 97	Mallee-heath	Opportunistic	200	10	-
			Quadrats						
RA09D	120,156	-33,590	Ravensthorpe Range	September 96; September 97	Mallee-heath	Opportunistic	50	10	50
			Quadrats						
RA09M	120,157	-33,590	Ravensthorpe Range	September 96; September 97	Mallee-heath	Opportunistic	200	10	-
			Quadrats						
RA13	120,157	-33,587	Ravensthorpe Range	September 96; September 97	Woodland	Opportunistic	50	10	50
RV01	119,143	-34,154	Private Property	Opportunistic	Mallee-heath	Opportunistic	-	-	Opportunistic
RV02	118,895	-34,344	Private Property	Opportunistic	Wetland Complex	Opportunistic	-	-	Opportunistic
RV03	118,941	-34,318	Private Property	Opportunistic	Wetland Complex	Opportunistic	-	-	Opportunistic
RV04	118,830	-34,941	Private Property	April 93	Mallee-heath	Opportunistic	150	75	-
RV05	119,026	-34,086	Private Property	Opportunistic	Woodland	Opportunistic	-	-	Opportunistic
RV06	118,910	-34,016	Private Property	Opportunistic	Mallee-heath	Opportunistic	300	40	300
RV06A	118,910	-34,016	Private Property	November 93; November 94	Mallee-heath	Opportunistic	300	40	300
RV06B	118,932	-34,024	Private Property	November 93; November 94	Woodland	Opportunistic	300	40	300
RV06C	118,916	-34,033	Private Property	Opportunistic	Mallee-heath	Opportunistic	-	-	Opportunistic
RV07	118,860	-34,968	Private Property	Opportunistic	Granite Complex	Opportunistic	-	-	Opportunistic
RV08	120,466	-33,833	Private Property	Opportunistic	Wetland Complex	Opportunistic	-	-	Opportunistic
RV09	119,633	-33,616	Private Property	Opportunistic	Mallee-heath	Opportunistic	-	-	Opportunistic
SC01	120,050	-33,586	Ravensthorpe High School	June 94; October 94; June 95; August 95	Woodland	Opportunistic	320	32	160

Appendix I. (cont.)

Site	Longitude	Latitude	Location	Dates	Vegetation	Trapping Effort (trap nights)
SC02	119.455	-30.765	Fitzgerald Primary School (Closed)	June 94; August 94; March 95; June 95	Heath	320 32 160
SC03	120.474	-33.711	Jerdacuttrup Primary School	February 95; April 95; July 95; September 95; November 95; March 96 June 96; November 96; September 97	Mallee-heath	720 72 360
SC04	118.916	-33.958	Jerramungup High School	May 95	Mallee-heath	80 8 40
SC05	118.483	-33.966	Ongerup Primary School	June 95	Woodland	80 8 40
SC06	118.934	-34.213	Gairdner Primary School	February 95; April 95; June 95; September 95; November 95	Mallee-heath	400 40 200
SC07	119.3497	-34.376	Bremer Bay Primary School	March 95; June 95; September 95; November 95; March 96	Mallee-heath	500 50 250

Ravensthorpe Nickel Project

Site	Longitude	Latitude	Location	Dates	Vegetation	Trapping Effort (trap nights)
RNO1	120.307	-33.575	Bandalup Hill	October 00		100 10 60
RNO2	120.306	-33.570	Bandalup Hill	October 00		100 10 60
RNO3	120.317	-33.565	Bandalup Hill	October 00		100 10 60
RNO4	120.327	-33.586	Bandalup Hill	October 00; December 01		100 10 90
RNO5	120.395	-33.661	Bandalup Hill	October 00		100 10 108
RNO6	120.398	-33.674	Bandalup Hill	October 00		100 10 96

RNOCMS1	120.398	-33,666	Bandalup Hill	November 99; April 00; December 01	Mallee-heath	300	30	240
RNOCMS2	120.375	-33,660	Bandalup Hill	November 99; April 00; December 01	Mallee-heath	300	30	180
RNOCMS3	120.356	-33,655	Bandalup Hill	November 99; April 00; December 01	Mallee-heath	300	30	180
RNOCMS4	120.354	-33,639	Bandalup Hill	November 99; April 00; December 01	Mallee-heath	300	30	180
RNOCMS5	120.327	-33,586	Bandalup Hill	November 99; April 00; December 01	Mallee-heath	100	10	60
RNOCMS6	0	0	Bandalup Hill	December 01	Mallee-heath	100	10	60
RNOCMS7	0	0	Bandalup Hill	December 01	Mallee-heath	100	10	60
RNOCMS8	120.306	-33,575	Bandalup Hill	December 01	Mallee-heath	100	10	60
RNOE01	120.356	-33,655	Bandalup Hill	November 99; April 00; October 00; December 01	Mallee-heath	400	-	-
RNOE02	120.357	-33,654	Bandalup Hill	November 99; April 00; October 00	Mallee-heath	300	-	-
RNOE03	120.370	-33,650	Bandalup Hill	November 99; April 00; October 00	Riparian Woodland	300	-	-
RNOE04	120.378	-33,655	Bandalup Hill	November 99; April 00; October 00	Mallee-heath	300	-	-
RNOE05	120.380	-33,637	Bandalup Hill	November 99; April 00; October 00; December 01	Mallee-heath	400	-	-
RNOE06	120.370	-33,623	Bandalup Hill	December 01	Riparian Woodland	100	-	-
RNOE07	120.363	-33,629	Bandalup Hill	December 01	Mallee-heath	100	-	-
RNOE08	120.367	-33,664	Bandalup Hill	December 01	Mallee-heath	100	-	-
RNOE09	0	0	Bandalup Hill	December 01	Mallee-heath	100	-	-
RNOE10	120.327	-33,568	Bandalup Hill	December 01	Mallee-heath	80	-	-
RNOE11	0	0	Bandalup Hill	December 01	Mallee-heath	80	-	-

Appendix II. Vertebrate fauna recorded from the Fitzgerald Biosphere Reserve
 (*indicates introduced species, #indicates extinct species in FBR, ^indicates
 extinct throughout its entire range)

INLAND FISHES

GOBIIDAE

Pseudogobius olorum Blue Spot Goby

GALAXIIDAE

Galaxias maculatus Common Galaxias

ATHERINIDAE

Leptatherina wallacei Western Hardyhead

SPARIDAE

Acanthopagrus butcheri Black Bream

POECILIIDAE

Gambusia holbrooki Eastern Gambusia*

FROGS

HYLIDAE

Litoria adelaidensis Slender Tree Frog
Litoria cyclorhyncha Spotted-thighed Frog

LIMNODYNASTIDAE

Heleioporus albopunctatus Western Spotted Frog
Heleioporus eyrei Moaning Frog
Limnodynastes dorsalis Western Banjo Frog
Neobatrachus albipes White-footed Frog
Neobatrachus kunapalari Kunapalari Frog
Neobatrachus pelobatoides Humming Frog

MYOBATRACHIDAE

Crinia georgiana Quacking Frog
Crinia glauerti Glauert's Froglet
Crinia pseudinsignifera Bleating Froglet
Crinia subinsignifera Small Western Froglet
Myobatrachus gouldii Turtle Frog
Pseudophryne guentheri Crawling Toadlet
Pseudophryne occidentalis Western Toadlet

REPTILES

CHELUIDAE

Chelodina oblonga Oblong Turtle

CARPHODACTYLIDAE

Underwoodisaurus milii Barking Gecko

DIPLODACTYLIDAE

Crenadactylus ocellatus ocellatus Clawless Gecko
Diplodactylus calicolus South Coast Gecko
Lucasium maini
Strophurus spinigerus inornatus Soft Spiny-tailed Gecko

GEKKONIDAE

Christinus marmoratus

Marbled Gecko

PYGOPODIDAE

Aprasia repens

Aprasia striolata

Delma australis

Delma fraseri fraseri

Pygopus lepidopodus

Common Scaly-foot

SCINCIDAE

Acritoscincus trilineatus

Cryptoblepharus pulcher clarus

Ctenotus catenifer

Ctenotus gemmula

Ctenotus impar

Ctenotus labillardieri

King's Skink

Egernia kingii

Egernia multiscutata

Egernia napoleonis

Egernia richardi

Hemiergus initialis initialis

Hemiergus peronii peronii

Lerista distinguenda

Lerista dorsalis

Lerista microtis intermedia

Lerista microtis microtis

Lerista viduata

Menetia greyii

Morethia obscura

Tiliqua occipitalis

Western Blue-tongue

Tiliqua rugosa rugosa

AGAMIDAE

Amphibolurus norrisi

Ctenophorus chapmani

Eastern Heath Dragon

Ctenophorus cristatus

Bicycle Dragon

Ctenophorus maculatus griseus

Ctenophorus ornatus

Ornate Crevice Dragon

Pogona minor minor

Western Bearded Dragon

VARANIDAE

Varanus gouldii

Bungarra or Sand Monitor

Varanus rosenbergi

Heath Monitor

TYPHLOPIDAE

Ramphotyphlops australis

Ramphotyphlops bicolor

Ramphotyphlops biturberculatus

Ramphotyphlops pinguis

Ramphotyphlops undescribed

BOOIDEAE	<i>Morelia spilota imbricata</i>	Carpet Python
ELAPIDAE	<i>Acanthophis antarcticus</i>	Southern Death Adder
	<i>Echiopsis curta</i>	Bardick
	<i>Elapognathus coronatus</i>	Crowned Snake
	<i>Notechis scutatus occidentalis</i>	Tiger Snake
	<i>Parasuta gouldii</i>	
	<i>Parasuta nigriceps</i>	Black-backed Snake
	<i>Pseudonaja affinis</i>	Dugite
	<i>Pseudonaja modesta</i>	Ringed Brown Snake
	<i>Rhinoplocephalus bicolor</i>	Square-nosed Snake
BIRDS		
CASUARIIDAE	<i>Dromaius novaehollandiae</i>	Emu
MEGAPODIIDAE	<i>Leipoa ocellata</i>	Malleefowl
PHASIANIDAE	<i>Coturnix pectoralis</i>	Stubble Quail
	<i>Coturnix ypsilophora</i>	Brown Quail
ANATIDAE	<i>Biziura lobata</i>	Musk Duck
	<i>Stictonetta naevosa</i>	Freckled Duck
	<i>Cereopsis novaehollandiae</i>	Cape Barren Goose
	<i>Cygnus atratus</i>	Black Swan
	<i>Tadorna tadornoides</i>	Australian Shelduck
	<i>Chenonetta jubata</i>	Australian Wood Duck
	<i>Malacorhynchus membranaceus</i>	Pink-eared Duck
	<i>Anas rhynchotis</i>	Australasian Shoveler
	<i>Anas gracilis</i>	Grey Teal
	<i>Anas castanea</i>	Chestnut Teal
	<i>Anas superciliosa</i>	Pacific Black Duck
	<i>Aythya australis</i>	Hardhead
	<i>Oxyura australis</i>	Blue-billed Duck
PODICIPEDIDAE	<i>Tachybaptus novaehollandiae</i>	Australasian Grebe
	<i>Poliiocephalus poliocephalus</i>	Hoary-headed Grebe
	<i>Podiceps cristatus</i>	Great Crested Grebe
DIOMEDEIDAE	<i>Diomedea exulans</i>	Wandering Albatross
	<i>Thalassarche chlororhynchos</i>	Atlantic Yellow-nosed Albatross
PROCELLARIIDAE	<i>Ardeanna carneipes</i>	Flesh-footed Shearwater
	<i>Ardeanna tenuirostris</i>	Short-tailed Shearwater
	<i>Pterodroma macroptera</i>	Great-winged Petrel

SPHENISCIDAE	<i>Eudyptula minor</i>	Little Penguin
SULIDAE	<i>Morus serrator</i>	Australasian Gannet
ANHINGIDAE	<i>Anhinga melanogaster</i>	Darter
PHALACROCORACIDAE	<i>Phalacrocorax melanoleucos</i>	Little Pied Cormorant
	<i>Phalacrocorax carbo</i>	Great Cormorant
	<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant
	<i>Phalacrocorax varius</i>	Pied Cormorant
PELECANIDAE	<i>Pelecanus conspicillatus</i>	Australian Pelican
ARDEIDAE	<i>Botaurus poiciloptilus</i>	Australasian Bittern
	<i>Ardea pacifica</i>	White-necked Heron
	<i>Ardea modesta</i>	Eastern Great Egret
	<i>Egretta novaehollandiae</i>	White-faced Heron
	<i>Egretta sacra</i>	Eastern Reef Egret
	<i>Nycticorax caledonicus</i>	Nankeen Night Heron
THRESKIORNITHIDAE	<i>Threskiornis molucca</i>	Australian White Ibis
	<i>Threskiornis spinicollis</i>	Straw-necked Ibis
	<i>Platalea regia</i>	Royal Spoonbill
	<i>Platalea flavipes</i>	Yellow-billed Spoonbill
ACCIPITRIDAE	<i>Pandion cristatus</i>	Eastern Osprey
	<i>Elanus axillaris</i>	Black-shouldered Kite
	<i>Elanus scriptus</i>	Letter-winged Kite
	<i>Lophoictinia isura</i>	Square-tailed Kite
	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle
	<i>Haliastur sphenurus</i>	Whistling Kite
	<i>Accipiter fasciatus</i>	Brown Goshawk
	<i>Accipiter cirrhocephalus</i>	Collared Sparrowhawk
	<i>Circus assimilis</i>	Spotted Harrier
	<i>Circus approximans</i>	Swamp Harrier
	<i>Aquila audax</i>	Wedge-tailed Eagle
	<i>Hieraetus morphnoides</i>	Little Eagle
FALCONIDAE	<i>Falco cenchroides</i>	Nankeen Kestrel
	<i>Falco berigora</i>	Brown Falcon
	<i>Falco longipennis</i>	Australian Hobby
	<i>Falco peregrinus</i>	Peregrine Falcon

RALLIDAE

Porphyrio porphyrio
Porzana fluminea
Porzana tabuensis
Tribonyx ventralis
Fulica atra

Purple Swamphen
 Australian Spotted Crake
 Spotless Crake
 Black-tailed Native-hen
 Eurasian Coot

OTIDIDAE

Ardeotis australis

Australian Bustard

BURHINIDAE

Burhinus grallarius

Bush Stone-curlew

HAEMATOPODIDAE

Haematopus longirostris
Haematopus fuliginosus

Australian Pied Oystercatcher
 Sooty Oystercatcher

RECURVIROSTRIDAE

Himantopus himantopus
Recurvirostra novaehollandiae
Cladorhynchus leucocephalus

Black-winged Stilt
 Red-necked Avocet
 Banded Stilt

CHARADRIIDAE

Pluvialis squatarola
Charadrius ruficapillus
Charadrius australis
Elseyornis melanops
Thinornis rubricollis
Erythronyx cinctus
Vanellus tricolor

Grey Plover
 Red-capped Plover
 Inland Dotterel
 Black-fronted Dotterel
 Hooded Plover
 Red-kneed Dotterel
 Banded Lapwing

SCOLOPACIDAE

Limosa limosa
Limosa lapponica
Numenius phaeopus
Actitis hypoleucos
Tringa nebularia
Tringa glareola
Arenaria interpres
Calidris tenuirostris
Calidris canutus
Calidris alba
Calidris ruficollis
Calidris melanotos
Calidris acuminata
Calidris ferruginea
Limicola falcinellus

Black-tailed Godwit
 Bar-tailed Godwit
 Whimbrel
 Common Sandpiper
 Common Greenshank
 Wood Sandpiper
 Ruddy Turnstone
 Great Knot
 Red Knot
 Sanderling
 Red-necked Stint
 Pectoral Sandpiper
 Sharp-tailed Sandpiper
 Curlew Sandpiper
 Broad-billed Sandpiper

TURNICIDAE

Turnix varius

Painted Button-quail

STERCORARIIDAE

Stercorarius antarcticus

Brown Skua

LARIDAE

<i>Sternula nereis</i>	Fairy Tern
<i>Hydropogone caspia</i>	Caspian Tern
<i>Thalasseus bergii</i>	Crested Tern
<i>Larus pacificus</i>	Pacific Gull
<i>Larus dominicanus</i>	Kelp Gull
<i>Chroicocephalus novaehollandiae</i>	Silver Gull
<i>Chlidonias hybrida</i>	Whiskered Tern

COLUMBIDAE

<i>Columba livia</i>	Rock Dove*
<i>Phaps chalcoptera</i>	Common Bronzewing
<i>Phaps elegans</i>	Brush Bronzewing
<i>Ocyphaps lophotes</i>	Crested Pigeon

PODARGIDAE

<i>Podargus strigoides</i>	Tawny Frogmouth
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EUROSTOPODIDAE

<i>Eurostopodus argus</i>	Spotted Nightjar
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AEGOTHELIDAE

<i>Aegotheles cristatus</i>	Australian Owlet-nightjar
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APODIDAE

<i>Apus pacificus</i>	Fork-tailed Swift
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CACATUIDAE

<i>Calyptorhynchus latirostris</i>	Carnaby's Black-Cockatoo
<i>Eolophus roseicapillus</i>	Galah

PSITTACIDAE

<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet
<i>Polytelis anthopeplus</i>	Regent Parrot
<i>Platycercus icterotis</i>	Western Rosella
<i>Barnardius zonarius</i>	Australian Ringneck
<i>Purpureicephalus spurius</i>	Red-capped Parrot
<i>Psephotus varius</i>	Mulga Parrot
<i>Neophema elegans</i>	Elegant Parrot
<i>Neophema petrophila</i>	Rock Parrot
<i>Pezoporus wallicus</i>	Ground Parrot

CUCULIDAE

<i>Chalcites basalis</i>	Horsfield's Bronze-Cuckoo
<i>Chalcites osculans</i>	Black-eared Cuckoo
<i>Chalcites lucidus</i>	Shining Bronze-Cuckoo
<i>Cuculus pallidus</i>	Pallid Cuckoo
<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo

STRIGIDAE

<i>Ninox connivens</i>	Barking Owl
<i>Ninox novaeseelandiae</i>	Southern Boobook
<i>Tyto alba</i>	Barn Owl

HALCYONIDAE

Dacelo novaeguineae
Todirhamphus sanctus

Laughing Kookaburra
Sacred Kingfisher

MEROPIDAE

Merops ornatus

Rainbow Bee-eater

MALURIDAE

Malurus splendens
Malurus pulcherrimus
Stipiturus malachurus westernensis

Splendid Fairy-wren
Blue-breasted Fairy-wren
Southern Emu-wren

DASYORNITHIDAE

Dasyornis longirostris

Western Bristlebird

ACANTHIZIDAE

Sericornis frontalis
Hylacola cauta
Calamanthus campestris campestris
Pyrholaemus brunneus
Smicrornis brevirostris
Gerygone fusca
Acanthiza chrysorrhoa
Acanthiza inornata
Acanthiza apicalis

White-browed Scrubwren
Shy Heathwren
Rufous Fieldwren
Redthroat
Weebill
Western Gerygone
Yellow-rumped Thornbill
Western Thornbill
Inland Thornbill

PARDALOTIDAE

Pardalotus punctatus
Pardalotus striatus

Spotted Pardalote
Striated Pardalote

MELIPHAGIDAE

Acanthorhynchus superciliosus
Lichenostomus virescens
Lichenostomus leucotis
Lichenostomus cratitius
Lichenostomus ornatus
Manorina flavigula
Acanthagenys rufogularis
Anthochaera lunalata
Anthochaera carunculata
Ephthianura tricolor
Ephthianura albifrons
Sugomel niger
Glyciphila melanops
Lichmera indistincta
Phylidonyris novaehollandiae
Phylidonyris niger
Melithreptus brevirostris
Melithreptus chloropsis

Western Spinebill
Singing Honeyeater
White-eared Honeyeater
Purple-gaped Honeyeater
Yellow-plumed Honeyeater
Yellow-throated Miner
Spiny-cheeked Honeyeater
Western Little Wattlebird
Red Wattlebird
Crimson Chat
White-fronted Chat
Black Honeyeater
Tawny-crowned Honeyeater
Brown Honeyeater
New Holland Honeyeater
White-cheeked Honeyeater
Brown-headed Honeyeater
Western White-naped
Honeyeater

POMATOSTOMIDAE

Pomatostomus superciliosus

White-browed Babbler

EUPETIDAE	<i>Psophodes nigrogularis oberon</i>	Western Whipbird
NEOSITTIDAE	<i>Daphoenositta chrysoptera</i>	Varied Sitella
CAMPEPHAGIDAE	<i>Coracina maxima</i>	Ground Cuckoo-Shrike
	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike
	<i>Lalage sueurii</i>	White-winged Triller
PACHYCEPHALIDAE	<i>Falcunculus frontatus leucogaster</i>	Crested Shrike-tit
	<i>Pachycephala inornata</i>	Gilbert's Whistler
	<i>Pachycephala pectoralis</i>	Golden Whistler
	<i>Pachycephala rufiventris</i>	Rufous Whistler
	<i>Colluricincla harmonica</i>	Grey Shrike-thrush
	<i>Oreoica gutturalis gutturalis</i>	Crested Bellbird
ARTAMIDAE	<i>Artamus personatus</i>	Masked Woodswallow
	<i>Artamus cinereus</i>	Black-faced Woodswallow
	<i>Artamus cyanopterus</i>	Dusky Woodswallow
	<i>Cracticus torquatus</i>	Grey Butcherbird
	<i>Cracticus nigrogularis</i>	Pied Butcherbird
	<i>Gymnorhina tibicen</i>	Australian Magpie
	<i>Strepera versicolor</i>	Grey Currawong
RHIPIDURIDAE	<i>Rhipidura albiscapa</i>	Grey Fantail
	<i>Rhipidura leucophrys</i>	Willie Wagtail
CORVIDAE	<i>Corvus coronoides</i>	Australian Raven
MONARCHIDAE	<i>Myiagra inquieta</i>	Restless Flycatcher
	<i>Grallina cyanoleuca</i>	Magpie-lark
PETROICIDAE	<i>Microeca fascinans</i>	Jacky Winter
	<i>Petroica boodang</i>	Scarlet Robin
	<i>Petroica goodenovii</i>	Red-capped Robin
	<i>Melanodryas cucullata</i>	Hooded Robin
	<i>Eopsaltria griseogularis</i>	Western Yellow Robin
	<i>Drymodes brunneopygia</i>	Southern Scrub-robin
ACROCEPHALIDAE	<i>Acrocephalus stentoreus</i>	Australian Reed-Warbler
MEGALURIDAE	<i>Megalurus gramineus</i>	Little Grassbird
	<i>Cinclorhamphus mathewsi</i>	Rufous Songlark
	<i>Cinclorhamphus cruralis</i>	Brown Songlark

TIMALIIDAE	<i>Zosterops lateralis</i>	Silvereye
HIRUNDINIDAE	<i>Cheramoeca leucosternus</i>	White-backed Swallow
	<i>Hirundo neoxena</i>	Welcome Swallow
	<i>Petrochelidon ariel</i>	Fairy Martin
	<i>Petrochelidon nigricans</i>	Tree Martin
ESTRILDIDAE	<i>Stagonopleura oculata</i>	Red-eared Firetail
MOTACILLIDAE	<i>Anthus australis</i>	Australian Pipit
MAMMALS		
TACHYGLOSSIDAE	<i>Tachyglossus aculeatus</i>	Echidna
DASYURIDAE	<i>Dasyurus geoffroii</i>	Chuditch
	<i>Parantechinus apicalis</i>	Southern Dibbler
	<i>Antechinus flavipes leucogaster</i>	Mardo
	<i>Phascogale calura</i>	Red-tailed Phascogale
	<i>Antechinomys laniger laniger</i>	Kultarr [#]
	<i>Sminthopsis crassicaudata crassicaudata</i>	Fat-tailed Dunnart
	<i>Sminthopsis gilberti</i>	Gilbert's Dunnart
	<i>Sminthopsis granulipes</i>	White-tailed Dunnart
	<i>Sminthopsis griseoventer</i>	Grey-bellied Dunnart
PERAMELIDAE	<i>Isodon obesulus fusciventer</i>	Southern Brown Bandicoot
	<i>Perameles bougainville bougainville</i>	Western Barred Bandicoot [#]
THYLACOMYIDAE	<i>Macrotis lagotis nigripes</i>	Bilby [#]
BURRAMYIDAE	<i>Cercartetus concinnus</i>	Western Pygmy-possum
TARSIPEDIDAE	<i>Tarsipes rostratus</i>	Honey Possum
PHALANGERIDAE	<i>Trichosurus vulpecula vulpecula</i>	Common Brushtail Possum
POTOROIDAE	<i>Bettongia penicillata ogilbyi</i>	Brush-tailed Bettong
	<i>Potorus platyops</i>	Broad-faced Potoroo [^]

MACROPODIDAE	<i>Lagostrophus fasciatus</i>	Banded Hare-wallaby#
	<i>Macropus eugenii</i>	Tammar Wallaby
	<i>Macropus fuliginosus ocydromus</i>	Western Grey Kangaroo
	<i>Macropus irma</i>	Western Brush Wallaby
	<i>Setonix brachyurus</i>	Quokka#
MOLOSSIDAE	<i>Tadarida australis</i>	White-striped Freetail-bat
VESPERTILIONIDAE	<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat
	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat
	<i>Chalinolobus morio</i>	Chocolate Wattled Bat
	<i>Vespadelus regulus</i>	Southern Forest Bat
MURIDAE	<i>Notomys mitchellii</i>	Mitchell's Hopping-mouse
	<i>Pseudomys albocinereus</i>	Ash-grey Mouse
	<i>Pseudomys occidentalis</i>	Western Mouse
	<i>Pseudomys shortridgei</i>	Heath Rat
	<i>Hydromys chrysogaster</i>	Water-rat
MURIDAE	<i>Mus musculus</i>	House Mouse*
	<i>Rattus fuscipes</i>	Bush Rat
	<i>Rattus rattus</i>	Black Rat*
	<i>Rattus tunneyi</i>	Pale Field-rat#
CANIDAE	<i>Vulpes vulpes</i>	Fox*
FELIDAE	<i>Felis catus</i>	Cat*
BOVIDAE	<i>Capra hircus</i>	Goat*
SUIDAE	<i>Sus scrofa</i>	Pig*
LEPORIDAE	<i>Oryctolagus cuniculus</i>	Rabbit*
